THE NEWSWEEKLY OF INFORMATION SYSTEMS MANAGEMENT
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# COMPUTERWORLD

## Data security plan bashed

*Federal panel foregoes popular RSA scheme*

BY MICHAEL ALEXANDER
CW STAFF

WASHINGTON, D.C. — The National Institute of Standards and Technology said last week it will endorse a computer security standard that critics immediately charged does not offer adequate protection, is too slow for commercial use and can probably be defeated.

The proposed standard, which is based on public-key cryptography technology, would protect a computerized document from tampering by stamping it with a digital signature that would prove the authenticity of the document creator.

In testimony before a U.S. House of Representatives subcommittee on technology and competitiveness, Raymond Kammer, deputy director of NIST, said the organization is "working out the final arrangements on the planned digital signature standard . . . based on a variant of the ElGamal signature technique."

The decision is a potential setback for Redwood City, Calif.-based RSA Data Security, Inc., a software company with about $5 million in sales last year. RSA

*Continued on page 80*

## Industry challenge: Survival

BY NELL MARGOLIS
and MARYFRAN JOHNSON
CW STAFF

Even as the rapid pace of technology shatters long-standing business assumptions, industry executives last week insisted their companies can shift gears fast enough to deal with new market realities.

"I don't think people realize how profound the changes are going to be in the industry," said Ronald Skates, chief executive officer of Data General Corp. DG, an early victim among old-line minicomputer firms, has radically shifted its strategy to focus on reduced instruction set computing technology.

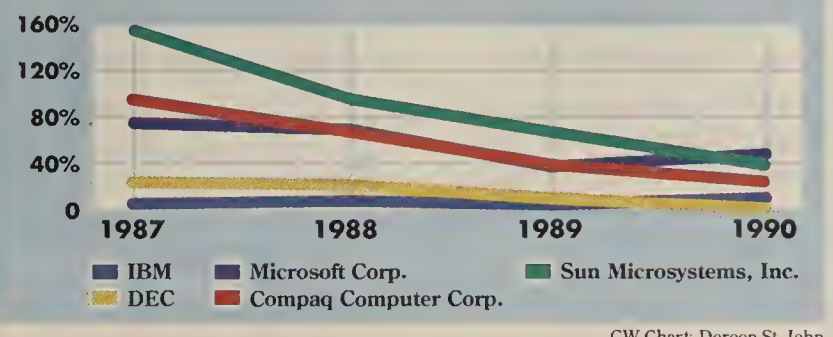
Recent events point out the extent of change:

• IBM's announcement that it expects no revenue growth this year, followed by a surprising equity/OEM alliance between IBM and Wang Laboratories, Inc. and talk of an alliance with

*Continued on page 8*

**The growth equation**

*Revenue growth rates of young firms have slowed as the companies have grown, but they still outpace IBM and Digital Equipment Corp.*




CW Chart: Doreen St. John

## Future systems may be ajar, not open

BY J. A. SAVAGE
and JOHANNA AMBROSIO
CW STAFF

*Second in a three-part series.*

As even the most proprietary of systems vendors such as IBM and Digital Equipment Corp. zealously pursue hearts and minds for open systems, the industry cannot quite seem to let go of all the old ways of doing proprietary business.

With the possible exception of Sun Microsystems, Inc., Unix vendors will keep some features of their open systems architectures to themselves, despite their claims to the contrary.

For some users, open systems means full portability of applications across architectures, and vendor insistence on distinctions among different versions of the same operating system falls short of the definition.

Michael Kaminski, manager of computer-integrated manufacturing and network technology at the General Motors Technical Center in Warren, Mich., said he is willing to put up with recompiling every application — but only for so long. Vendors treat recompiling as a necessary and easy step, he said.

"They're not really listening, just like we at GM didn't listen to our customers, and we paid

*Continued on page 81*

## Officevision LAN project slogs into '92

*Other key features get ship dates for this year*

BY PATRICIA KEEFE
CW STAFF

NEW YORK — Impatient users tapping their toes over the much delayed IBM Officevision LAN Release 2.0 may have to wait until 1992 or later for IBM to complete the project.

Last week, during a promised June update, IBM could not provide ship dates for either a 32-bit version of Officevision LAN or the direct connect workstation-to-host link that many high-end Officevision users need.

IBM did, however, lay out a two-phase delivery schedule for the remainder of the year that will open up Officevision to users of Novell, Inc.'s market-leading Netware network and Microsoft Corp.'s highly successful Windows 3.0.

**Alliance announced**

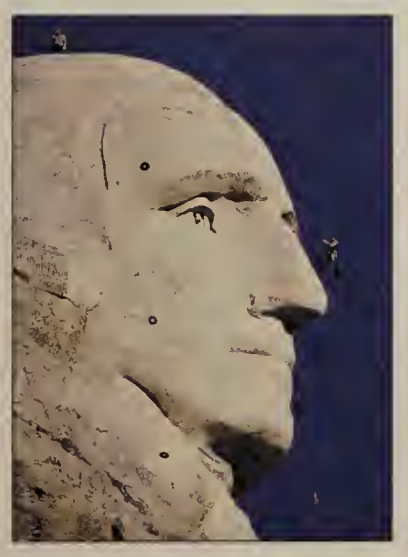
Separately, IBM and Lotus Development Corp. announced an expected marketing and technology alliance [CW, June 24] that will have a far-reaching impact on future versions of OS/2 and will also provide a consistent approach to mail transport across both companies' platforms.

First announced in May 1989, Officevision LAN 2.0 was supposed to ship in the first quarter of 1990. IBM has since missed revised delivery dates in late 1990 and February 1991.

"We will have some interim

*Continued on page 78*

## Help needed, by George



**Almost a half a century old,** *the Mt. Rushmore memorial will finally be dedicated on Independence Day. In recent months, advanced computer-aided mapping and design methods have been used to plan repairs to gaping cracks in the edifice.* *See story page 4.*

NEWSPAPER

## Restructuring brings pain, promise for Aetna IS group

BY ELISABETH HORWITT
CW STAFF

*WANTED: Seasoned IS professional to design and implement standards-based IS architecture at $20 billion Hartford, Conn.-based insurance and financial services firm.*

That advertisement might aptly describe one of several crucial managerial gaps that Aetna Life and Casualty Co.'s chief information officer, John D. Loewenberg, needs to fill in a restructured information systems organization that formally went into place in March. But as the insurance firm reaches out for expertise to revise its computing strategy — moving toward standards-based platforms — it is also experiencing the departure of some highly placed people, sources said.

Aetna's IS restructuring, intended to move applications development much closer to business units, is happening concurrently with a corporatewide reorganization announced last October. The corporate realignment is expected to eliminate about 2,600 positions over an 18-month period, although the company's IS department is not expected to be a target for any significant downsizing, Loewenberg said.

Nonetheless, the transition has not been without its bumps. Some recent departures by key

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## Quotable

*"They're not really listening, just like we at GM didn't listen to our customers, and we paid the price."*

MICHAEL KAMINSKI
GENERAL MOTORS

*On the need for open systems.*
*See story page 1.*


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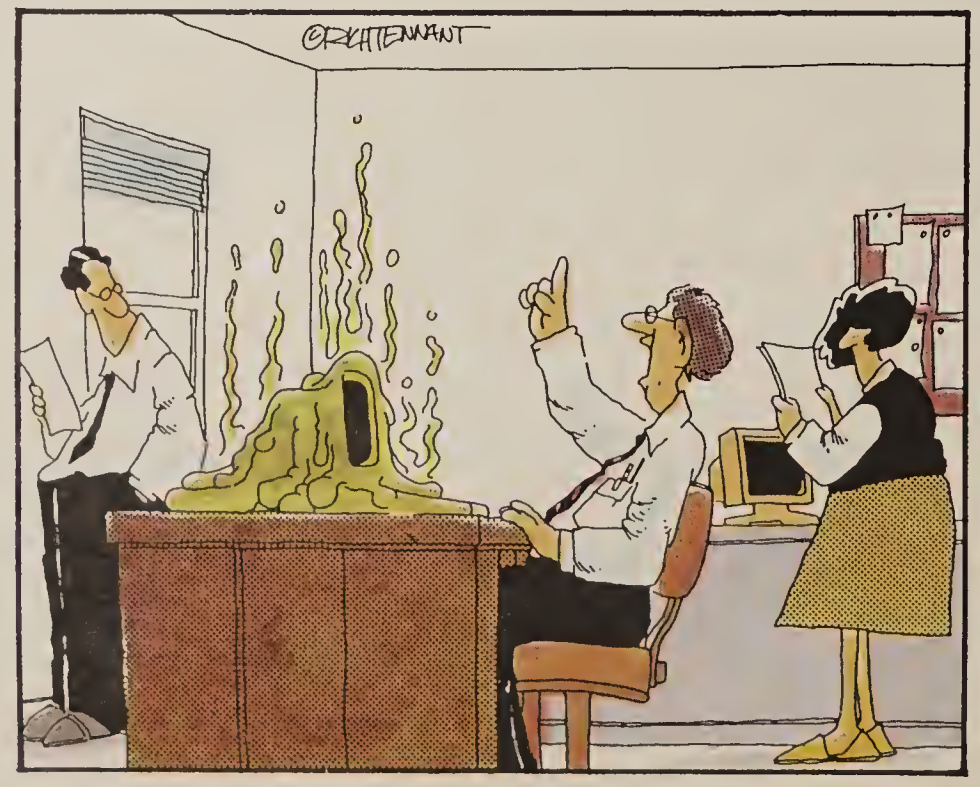
## The 5th Wave




"YO-I THINK WE'VE GOT A NEW KIND OF VIRUS HERE!"

# EXECUTIVE BRIEFING

■ **Aetna is struggling to fill strategic management positions as a result of a major IS restructuring.** Some key managers have departed after their job responsibilities were changed. But the $20 billion insurer's overall goal to tie systems development more closely to business units is "on the right track," in the words of one observer. **Page 1.**

■ **Nonprofit organizations can teach commercial IS shops a thing or two about surviving in tough times.** Among the lessons they offer: Never miss an opportunity to motivate workers, back away from the leading edge of technology when appropriate, and consider buying off-brand PCs and software for noncritical applications. **Page 51.**

■ **Customers will be the big winners** as a result of dramatic changes under way in the computer industry. As the traditional hardware business continues to shrink, vendors are clamoring to lower prices and serve customers with flexible deals and unusual new alliances. **Page 1.**

■ **Better use of IS could be a cure** for the nation's runaway health care costs, as health care providers lag behind other industries in automating most processes. But hospitals may not be willing to make the necessary technology investments or to abandon traditional paper-based processes. **Page 47.**

■ **Officevision LAN Release 2.0 is delayed again.** Originally scheduled to ship early last year, IBM's 32-bit office applications suite will not arrive until 1992 at the earliest. But it will be open to incorporate Netware and Windows 3.0. **Page 1.**

■ **The vulnerability of complex telephone switching networks** is back in the spotlight after software glitches cause local service outages in both Washington, D.C., and Los Angeles. Although the two cities' outages were unrelated, analysts say disaster recovery backup systems at the local level are still not adequate. **Page 13.**

■ **An alleged hacker is arraigned** in San Diego on charges that he created a logic bomb and then planned to be hired as a consultant to clean up the damage. The accused is a disgruntled programmer who worked on the Atlas Missile program at General Dynamics. **Page 10.**

■ **Congress criticizes the IRS** for management and technology shortcomings in its $8 billion systems overhaul. Lawmakers zero in on a GAO report questioning the viability of optical character recognition. **Page 4.**

■ **The path to open systems is riddled** with the same old ruts: vendors' needs to differentiate themselves with proprietary offerings. Although vendors make a variety of claims to the contrary, IS managers remain skeptical. **Page 1.**

■ **Computers and humanitarianism mix** in the work of 10 *Computerworld* Smithsonian Award finalists, organizations that use their technological wizardry to improve the way we live. **Page 57.**

■ **Many major hotels are revamping older technologies** currently in place and opening doors for IS professionals in the process. **Page 68.**

■ **On-site this week:** Mutual of Omaha feels secure about its commitment to OS/2, which will eventually support 1,100 workstations for processing health claims. **Page 31.** An interactive video system helps the Bexar County District Attorney's Office in San Antonio prosecute child abuse cases by allowing children to testify outside of the courtroom. **Page 35.** An aging IBM 4381 gets new life at St. Vincent's Hospital/Fallon Clinic in Worcester, Mass., as Global Software and Genesys Software Systems applications move the merged health care facilities from a batch to an on-line environment. **Page 25.**

# Blue Cross and Blue Shield of Maryland optimizes sorting to maximize operational efficiency.

To companies concerned with minimizing overhead costs and streamlining operations to maximize throughput, data management is critical. So critical, in fact, that they constantly seek new ways to efficiently process frequently run, resource-intensive jobs.

One area which, if optimized, could slash both CPU time and I/Os is sort processing. At Blue Cross and Blue Shield of Maryland (Owings Mills, Maryland), for example, maximizing sort efficiency has cut our CPU time on certain resource-intensive batch jobs by as much as 60% and our EXCPs by over 99%.

Sorting is involved in virtually every application we run, and is a critical component of most operations. We view sorting as an essential utility; like the telephone you don't really think about it, but you're always using it.

Without sorting it would be impossible to complete required data processing operations efficiently. But equally important, without a fully functional sort package we would not be able to provide end-users with the various perspectives they need on data. We can give the same information to five different end-users and each may require a different view of that data. Our sorting package allows us to swiftly and efficiently meet these varying needs.

The sorting software Blue Cross and Blue Shield of Maryland uses is SyncSort OS, a high performance sort, merge, and copy utility from Syncsort Inc., Woodcliff Lake, New Jersey. In Syncsort's benchmark tests comparing the product to other sort systems, SyncSort has been shown to yield savings of 20% task CPU time, 50% supervisor CPU time, and 35% I/Os. But to Blue Cross and Blue Shield of Maryland, those figures are overly conservative.

To optimize utilization of their sorting software, we contracted with Syncsort for performance enhancement services which showed us how to cut sorting time to the bone. First their consultants identified the most resource intensive jobs which invoke sort, and then they analyzed these jobs to see how we could optimize performance. For one group of seven jobs, their recommendation—to increase region size, or memory allocated to sort—enabled us to slash CPU time from 203 seconds to 131 seconds, and EXCPs from 57,340 to just 463. Improvements were similar for another job where we saw EXCPs drop from 37,975 to 524 and CPU time from 88 seconds to 35 seconds.

*by BILL RUFF*
*Senior Systems Engineer*
*at Blue Cross and Blue Shield of Maryland*

The sorting software is used for batch sorting, standalone sorts, internal COBOL program sorts, and as a subset of DB2 processing. Whenever a sort module is called by DB2, it will exit over into SyncSort. In addition, the sort product feeds data to a variety of 4GL reporting products used by Blue Cross and Blue Shield of Maryland.

The major applications for sort at the company are in reorganizing and loading databases. We use both IMS and DB2 databases,and both eventually become fragmented because of inserts and deletes. So what we do is read the database to a flat file, resequence it using our sort software, and then write the data back out. Sorting is also important for increasing the efficiency of loading flat files into DB2 databases.

By tuning databases for performance this way, we reduce storage space requirements so the amount of DASD we need to buy is reduced, and also cut I/O and thereby minimize overheadprocessing costs.

Sort is such an integral function to company operations that end-users are also allowed to use the software. To facilitate access for less skilled end-users, Online-SyncSort (OLS) was installed. This utility automatically generates the sort control statements required to fulfill a sort request. In other words, it acts as an online front end to the main sort package.

With this front-end, virtually any end-users can create subsets of our entire database of information containing 14 million records, and quickly transfer these data subsets to a 4GL to obtain the specific information they require in the format they desire. Actuarial types, for example, can now easily view a historical information file of claims by medical procedure, physician code, or zip code. In most cases this pre-sorting is mandatory because the 4GLs have record size limitations.

Blue Cross and Blue Shield of Maryland's emphasis on maximizing sorting efficiency has also led us to install SyncSort/COBOL Accelerator. Without modifying existing COBOL programs, whenever SyncSort is called by a COBOL program, the Accelerator allows the sort program to control sort related I/O processing and significantly improve performance. For COBOL sorts with USING and/or GIVING clauses, this utility has been shown by Syncsort to reduce task CPU time by 70%, supervisor CPU time by 80%, I/Os by 87%, and elapsed time by 69%.

To improve performance of applications running SAS, Blue Cross and Blue Shield of Maryland also installed PROC SYNCSORT, a replacement for the SAS provided procedure PROC SORT that provides SyncSort with direct access to SAS data files. The typical result, according to Syncsort, is a 60% reduction in resource utilization for SAS sorts, and a 50% cut in elapsed sort time. Online-SyncSort, SyncSort OS, SyncSort/COBOL Accelerator, and PROC SYNCSORT are now available bundled with an applications workshop and performance enhancement services in a single system called SyncSort Productivity Maximizer.

We deal with enormous amounts of data. Our historical file alone, for example, occupies 37 tape cartridges. The daily transaction load is in excess of 5 million per day. This includes our responsibility as a host processing site for the Healthcare and Finance Administration (HCFA).

A sort product alone is not a complete solution for maintaining operational efficiency in such an environment. What's needed—and what we've achieved with Syncsort—is a family of sorting utilities, each of which is optimized for performance in its specific operating environment.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# Mt. Rushmore's presidents get high-tech face-lifts

BY JAMES DALY
CW STAFF

Geologist Tim Vogt always admired George Washington but never thought that one day he would climb down the old man's nose. Yet there was Vogt, inching across the beak of the Father of Our Country, centered squarely on the 5-story-high face that forms the visual anchor of Mt. Rushmore.

Vogt's ramble high above the verdant Black Hills of South Dakota is part of an ambitious project to repair and preserve one of America's most famous icons using advanced computer-aided mapping and design methods.

While the busts of Washington, Thomas Jefferson, Theodore Roosevelt and Abraham Lincoln may look solid from afar, any one of the mountain goats that regularly spring across the presidential hairlines knows they are laced with hundreds of cracks. "And it just wouldn't do to see Washington's head eventually split down the middle," said Vogt, a member of Re/Spec, Inc., the Rapid City, S.D., geological consulting firm heading the project.

Although its figures were carved nearly 50 years ago, Mt. Rushmore receives a long-overdue dedication ceremony this week during an elaborate Independence Day celebration featuring President Bush.

Re/Spec's first task in the quarter-million-dollar overhaul was the detailed mapping of the mountain. Helicopters and small planes took hundreds of aerial photographs that were integrated with ground photos in a stereoplotting process designed to define structural features. The data was crunched through assorted Compaq Computer Corp. systems and IBM Personal Computers using Autodesk, Inc.'s Autocad application.

The overhanging topography of the area as well as the detail desired made plotting a challenge, Vogt said. Eventually, the firm produced a three-dimensional wire-frame image of the monument made up of 100,000 data points. Known structural cracks were then overlaid.

Vogt clacked a few keyboard buttons to showcase the fissure running across Washington's nose. The frontal break is linked on-screen to a similar crack in the back of the mountain ledge, producing a twisting horizontal internal fracture resembling an elongated potato chip. "That's not too bad," he judged.

A chief repair concern for Vogt has been the original crack sealant, a bizarre mixture of white lead, linseed oil and granite dust that lacked the elasticity needed for the malleable mountain. Chunks of it have broken off, while much of the remaining sealant is cracked or chipped. The replacement, Vogt said, will be a silicon-based mixture that will not discolor or break down under intense sunlight.

Repairs to Mt. Rushmore are expected to begin in the fall and be completed within a year.

Page 1 photo and above: Paul Horsted

**Vogt and a park employee** *examine fissures on Mt. Rushmore with a view to repairing the cracking proboscus of the nation's founding father*

# IRS' systems overhaul plan under fire

BY GARY H. ANTHES
CW STAFF

WASHINGTON, D.C. — Just two weeks after the Internal Revenue Service unveiled its $8 billion systems overhaul plan [CW, June 17], the project was criticized by a congressional panel for a variety of managerial and technological lapses.

Senate Governmental Affairs Committee Chairman John Glenn (D-Ohio) said: "This plan raises questions about the availability of new technologies . . . [and it] raises significant privacy and security considerations."

Glenn's concerns were sparked in part by three new studies of the IRS released by the U.S. General Accounting Office last week.

In one, congressional auditors questioned whether optical character recognition (OCR) technology will have advanced sufficiently to allow electronic capture of data from tax returns and other forms, as the IRS intends. The IRS should plan now for greater reliance on alternatives — such as electronic filing — if necessary, the GAO said.

The GAO also faulted the master plan for not dealing adequately with issues of taxpayer privacy.

"This is a serious omission in view of the fact that the IRS intends to allow public access . . . to some of its systems and because concerns over the security of taxpayer information helped doom the first [IRS] modernization effort in the late 1970s," testified GAO official Howard G. Rhile.

IRS Commissioner Fred T. Goldberg said the IRS generally agreed with the GAO findings. He said the master plan for tax system modernization released two weeks ago was only a draft and that subsequent versions will include rigorous treatment of privacy and other issues found lacking by the GAO.

"We have been running our business essentially the same way, using essentially the same computer and telecommunications systems design for 25 years," Goldberg said. Nevertheless, existing systems "will perform well and achieve incremental improvements for the next few years," he added.

The IRS plan is not critically dependent on OCR, Goldberg said. "But our best judgment is that technology will be there when we need it, by the end of the decade," he added.

The GAO also said that the modernization plan failed to adequately address transition planning, progress measurement and accountability for major activities as well as the recruitment, training and retention of highly skilled technicians.

## Audit check

*The Internal Revenue Service's latest modernization effort is drawing criticism for its scope and technological foundation*

**Estimated costs and benefits through 2008 (figures in billions)**

| | |
|---|---|
| **COSTS** | |
| • Capital investment in hardware and software | $8.3 |
| • Transition, training, etc. | $3.4 |
| • Operations and maintenance | $9.3 |
| Gross cost | $21.0 |
| Less cost of currently planned systems | $13.5 |
| Incremental cost of new systems | $7.5 |
| **BENEFITS TO GOVERNMENT** | |
| • Cost savings through productivity gains | $8.0 |
| • Increased revenue and interest savings | $3.0 |
| Total benefits to government | $11.0 |
| **BENEFITS TO PUBLIC** | |
| • Reduction in payments to third parties | $6.0 |
| • Reduction in taxpayer time spent dealing with IRS | 1 billion hours |

Source: IRS

CW Chart: Doreen St. John

## CORRECTIONS

The internal memo by Microsoft Corp. Chairman Bill Gates on strategic challenges facing his company [CW, June 24] was not made available by the company, as was reported last week. *Computerworld* obtained a copy from a confidential source.

The Software Publishers Association must get a search-and-seizure order from a judge before it can conduct a raid on a user site. Our June 17 story did not make that requirement clear.

De Anza College's Bay Area Coalition for Employment of Persons with Disabilities, which won a 1991 *Computerworld* Smithsonian Award, uses 9.6K bit/sec. modems donated by U.S. Robotics, Inc. [CW, June 17].


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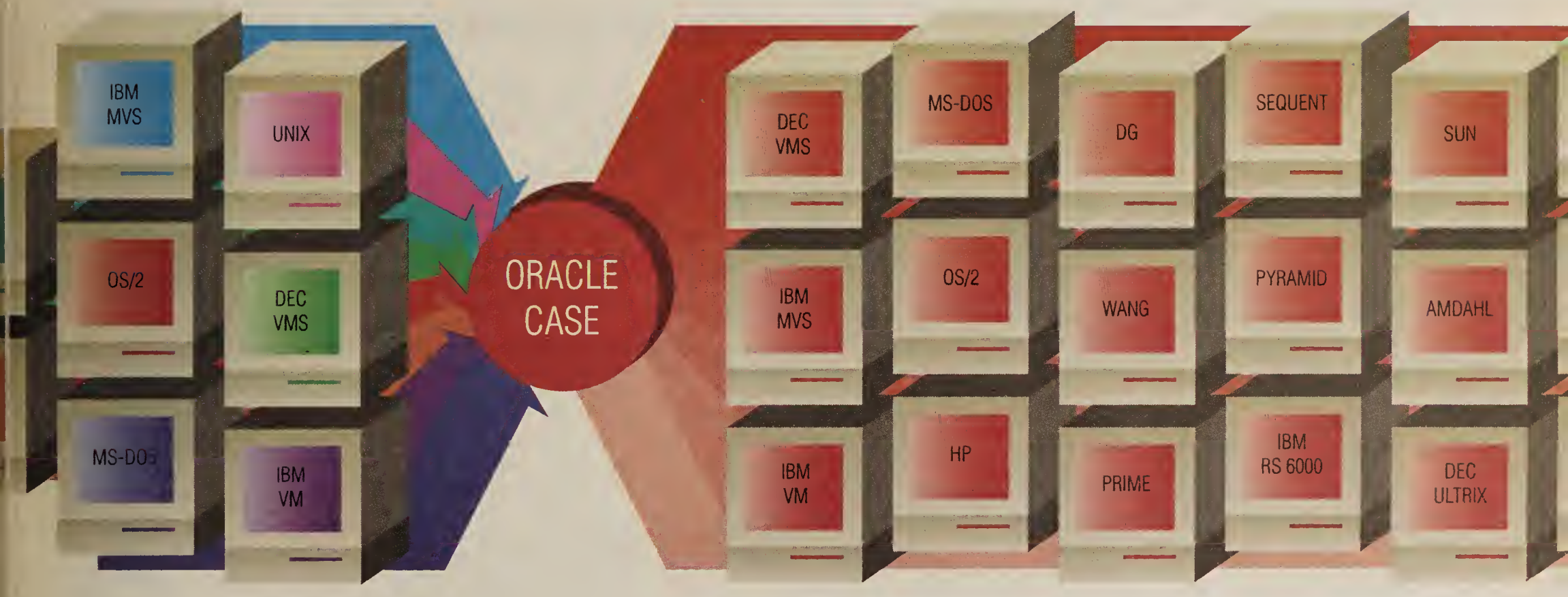


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# NEWS SHORTS

## Apple adds support packages

Apple Computer, Inc. announced last week the availability of several key support packages, including two that could help take the early guesswork out of accommodating the System 7.0 operating system. The Technical Coordinator Answerline and Software Development Answerline are subscription services designed for customers that are upgrading to System 7.0 and feel overwhelmed by the questions such a system upgrade engenders. Prices begin at $1,995 for 12 months of unlimited toll-free access. Editions limiting users to six calls per year start at $495. Additionally, A/UX Answerline services were beefed up. Prices for that service begin at $1,395 for the unlimited-use edition and $395 for the limited-use package.

. . . . . .

## Unshielded high-speed net due

In the wake of a collective announcement by five vendors that they will start rolling out interoperable products running the high transmission rates of Fiber Distributed Data Interface local-area networks over shielded twisted-pair wiring this summer, Cabletron Systems, Inc. said last week it will ship products that add unshielded twisted-pair support by early second quarter next year. Cabletron, which co-developed its technology with chip maker National Semiconductor Corp., said it has formed no interoperability partnerships yet. Thus, the 100M bit/sec. copper connections on its adapter cards and smart-hub modules may not interoperate with interfaces from Digital Equipment Corp., Chipcom Corp. and Synoptics Communications, Inc., which developed their products with Advanced Micro Devices, Inc. and Motorola, Inc.

. . . . . .

## HP package heading for Sun

Hewlett-Packard Co. and Sun Microsystems, Inc. have inked an agreement whereby HP will port its mechanical computer-aided design software to Sun workstations. The packages have previously been available only on HP workstations and IBM-compatible personal computers. The initial port will include HP's ME10 two-dimensional design and drafting software as well as its data management system. HP officials said its solid modeling products are also expected to be included. The products are due in the first quarter of 1992.

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## GE service goes to 9.6K bit/sec.

The Genie on-line information network run by GE Information Services began supporting 9.6K bit/sec. access in more than 80 North American cities last week. Previously, the highest asynchronous dial-up speed on Genie was 2,400 bit/sec. Genie supports the V.32 protocol for 9.6K bit/sec. modems.

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## RS/6000 gets OLTP package

Ally Software, Inc., a subsidiary of Unisys Corp., announced last week a port of an on-line transaction processing monitor for the Unix-based IBM RISC System/6000. The package, called Tuxedo, is the property of Unix System Laboratories in Morristown, N.J., the AT&T subsidiary that markets Unix System V and related systems software, and was ported under an agreement between Unix System Laboratories and Ally.

. . . . . .

## A 4GL for the Fourth

Software AG of North America, Inc. in Reston, Va., is expected to announce this week the availability of Natural for OS/2, a version of its fourth-generation language for PCs. Single-user or LAN versions cost between $300 and $1,000 per user.

. . . . . .

## On-Line reports higher profit

On-Line Software International, Inc. in Fort Lee, N.J., last week reported record revenue and earnings per share for the fourth quarter and year ended May 31, 1991. Net income for the fourth quarter increased 40% to $1.7 million, while revenue in the same time frame increased 14% to $27.6 million. For the year, net income was up 37% to $4.5 million, and revenue increased 13% to $101.3 million.

*More shorts on page 80*

# Wang makes more changes

BY PATRICIA KEEFE
CW STAFF

LOWELL, Mass. — Wang Laboratories, Inc. last week announced its latest restructuring and a new round of layoffs, both of which company President Richard Miller said he hopes will be the last.

Miller said the goal is for these changes to move the company back into the black during fiscal 1992 by reducing Wang's annual costs "substantially."

He said restructuring charges recorded in the fourth quarter, which ended June 30, will be "significant," but he declined to comment further.

Miller also announced that Horace Tsaing is stepping down as chief development officer. Tsaing's replacement will come from outside the company.

During the next several months, Wang will reduce its global work force by 3,000 to 4,000. Half of those cuts will be made in Massachusetts. Regional sales administration, finance and MIS will be the hardest hit as Wang consolidates four sales regions into two — one of which will be located here.

Wang's corporate structure will consist of three worldwide business units:

- Wang Information Systems will provide direct sales, service, manufacturing and distribution for the VS, Wang's personal computers and IBM hardware. It will provide new, state-of-the-art VS systems, upgrades and connectivity and will assist with conversion or migration to IBM platforms.
- Office 2000 embodies Wang's strategic thrust for the '90s. It will house Wang's consulting and systems integration services, focusing on document management and Wang's imaging technologies.
- Personal Computer Systems will move a substantial volume of Wang PCs into the mass merchandising channel. Several contracts are pending.

Wang is also rethinking both its membership in the Advanced Computing Environment consortium and an OEM pact with Mips Computer Systems, Inc. A calendar will be released this month that will detail when various conversion tools will be available, Miller said.

The upcoming VS model, called Mercury, will ship in the fall.

# L.A. earthquake spares data staffs

BY COMPUTERWORLD STAFF

PASADENA, Calif. — The earthquake that killed at least one woman and injured two dozen other people on Friday forced temporary evacuations of buildings but generally brought little damage to data center operations in the Pasadena area Friday.

Typical comments from data center personnel interviewed by telephone included reports of "some damage, nothing major," from a worker at Kaiser Credit Union in Pasadena, a few miles from the point in the San Gabriel, Calif., foothills where the 7:43 a.m. earthquake, rated at 6.0 on the Richter scale, was centered.

"Everything seems to be fine, but we had one hard drive crash on an office automation system," noted Patrick Lewis, a staff member in the information systems department at Avon Products, Inc. in Pasadena.

### Evacuation for safety

At the California Institute of Technology in Pasadena, the earthquake knocked out an IBM 3880 controller for 2½ hours. Operations supervisor Richard Carlborg said the building housing the main data center was evacuated for 45 minutes for a safety check.

Within two hours of the quake, most IS managers were reporting that their operations were back to normal, with damage typically being restricted to broken windows, cracks in walls and a few disabled telephone lines.

"Our computers were down for a time, but they were back within an hour," said one computer operations staff member at Marshall Industries, Inc. in El Monte, Calif. El Monte is located close to the earthquake's epicenter.

# Aetna

FROM PAGE 1

employees apparently stemmed from Loewenberg's decision to look outside of the company to fill certain positions in his new organization.

"Some [IS] people's jobs or positions have been eliminated because their skills did not match up with what was needed — no reflection on their overall abilities," said company spokesman John Hawkins. Such people were offered other positions, rather than being laid off, he said.

Not all people have liked their new jobs enough to stick with them. "In the throes of reorganization, I was offered a job I thought was uninteresting, so I left," said Don Mick, who worked at Aetna for 18 years, the last six of which were spent in corporate technology planning. "I understand the guy who replaced me has left too."

"You've got to expect some people to be unhappy" during a major reorganization, said Ernst & Young partner David Passmore, who has attended a briefing about the new structure. "You have major operating divisions that were run as independent profit centers now being forced to work together and support things like standards. A lot of employees are getting their oxes gored."

Aetna's IS reorganization has been particularly unsettling, sources said, because it comes right on the heels of significant IS management change. Approximately two years ago, Loewenberg came in as CIO and made his own appointments to top IS management positions. The net effect has been that of a revolving door for some key positions.

For example, Jeff Alperin, who headed corporate technology planning during Mick's time there, was offered an alternative position and ultimately left the company, Mick said. Alperin's replacement, Dan Hickey, is now in charge of delivery systems support under Loewenberg's new umbrella organization.

There is no corporate technology planning group within the new organization; the closest equivalent — direction-setting and standards — is still waiting for a leader.

The new Aetna Information Technology organization ties systems development groups to specific business units and products in order to better support a companywide reorganization into a more business-unit-oriented structure, Loewenberg said. Where Aetna's business was "driven by large, monolithic divisions, there are now small business units that can respond faster" to customer needs, an Aetna spokesman said.

"They seem to be pretty serious about their strategy to standardize networking, databases, hosts and LANs — everywhere that can benefit from open systems," Passmore said.

A corporatewide belt-tightening was an obvious move, analysts said, given the general softness of the industry. In 1990, Aetna's profits dropped 9% to $614 million on a 1% drop in revenue to $19.4 billion.

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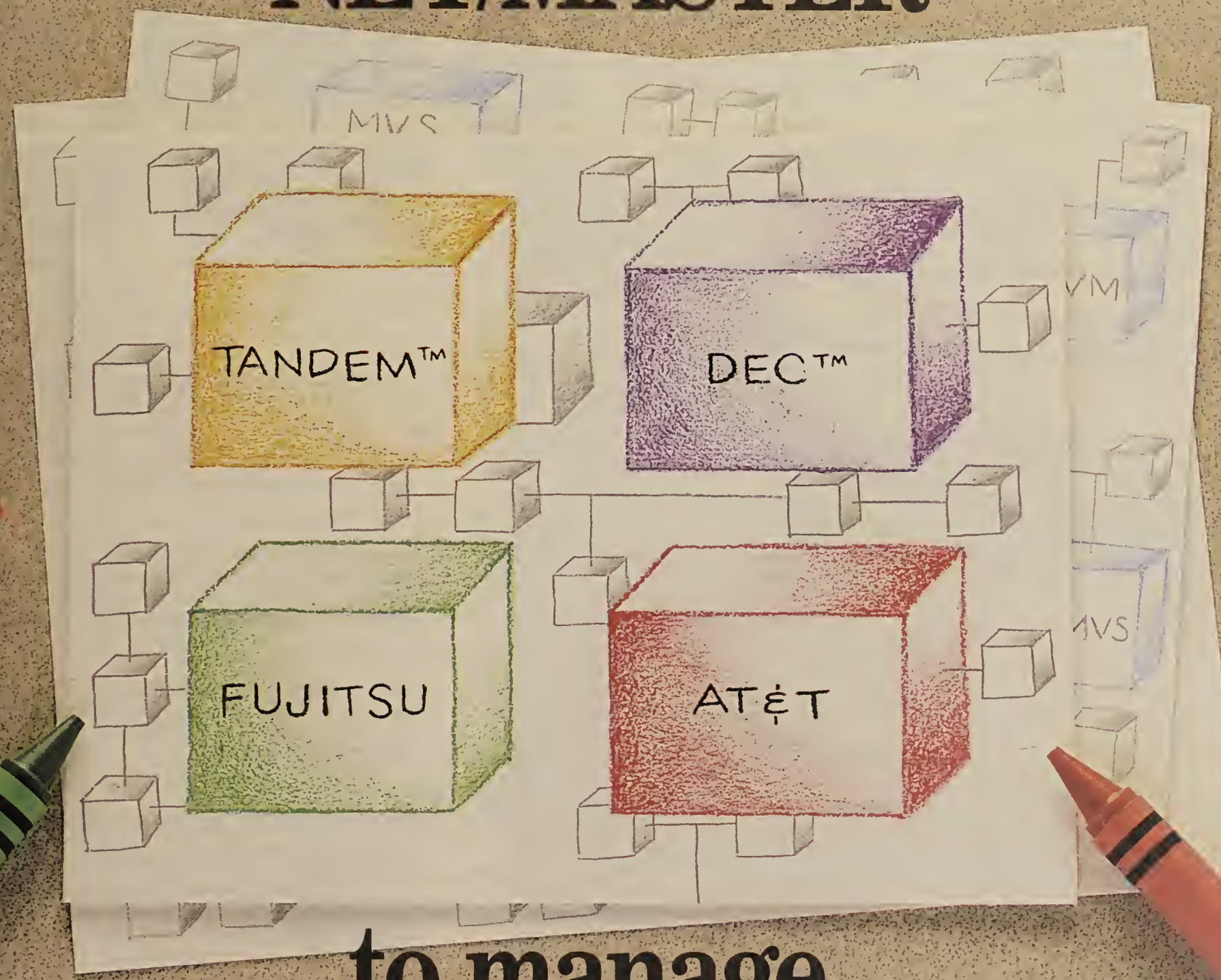


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# Survival

FROM PAGE 1

Apple Computer, Inc.
- Major layoffs pending at Apple and further cutbacks at Digital Equipment Corp.
- Compaq Computer Corp., the one clone maker formerly able to charge premium prices for PCs, forced to slash prices to compete with low-cost competitors.
- Even seemingly unstoppable Microsoft Corp. revealed concerns about strategic challenges.

"The companies that are able to respond [most quickly] to the changing needs of customers are the ones who will be most successful," said Stephen Schwartz, vice president of market-driven quality at IBM. "In the 1970s and '80s, customers wanted to do things for themselves. In the 1990s, they want to return to tending their own businesses and buying from the outside what they used to do internally."

But does IBM — which has been painfully downsizing for three years and is indicating it has much further to go — fit that bill? Schwartz offered as evidence IBM's admission that it cannot do everything itself and its growing number of business alliances.

Where IBM was once able to dominate the industry by size alone, it is now facing challenges from companies that find opportunity in being small, according to other executives. "Twenty years ago, IBM owned the value chain," said Hewlett-Packard Co. President John Young. "Standards break up that value chain; they open up many new entry points for smaller, highly focused niche players."

Even now, noted Frank Gens, an analyst at Framingham, Mass.-based Technology Investment Strategies Corp., "IBM might still be the most influential vendor, but it's joined by a large number of smaller companies that have consolidated their clout through consortia and partnerships."

The increasing willingness to ally themselves with former fierce competitors may be one of the most encouraging signs that both IBM and DEC can execute on their ambitious transition plans, said analysts such as Norman Weizer at Cambridge, Mass.-based consulting and research firm Arthur D. Little, Inc. "It doesn't matter whether DEC's efforts in the ACE alliance, or IBM's Wang and Lotus deals, for instance, are strategic or defensive," he said. "What's critical is that they're doing it."

How quickly or easily they can do it is another question. "I know how tough it was for us to bring off our transition to RISC," Young said (see story below). "Did we pay? We paid plenty, and we paid everywhere: in the labs, in time and in plain old currency."

Top executives at both IBM and DEC agreed that cost-cutting and restructuring will be a constant factor in coming years.

Viewing the prospect of frequent layoffs and reorganizations negatively should be avoided, said Bob Puette, president of Apple USA. "Restructuring is a way of life if you're in this thing called business — computer, or any other kind," he said.

The willingness and ability to trim and refocus, analysts and executives agreed, is critical not because giant size is a liability in and of itself but because of the burgeoning importance of flexibility. For instance, a recognition that technological change has yielded manufacturing efficiencies requires a response of fewer plants staffed with smaller work forces.

Which companies will best meet the challenges remains to be seen. If the last few weeks are any example, the remainder of the year should supply observers and users with a truckload of new, and probably contradictory, signals. "The one biggest mistake we could make would be to remain static," said Michael Hallman, president of Microsoft Corp.

Meanwhile, industry executives and observers agreed that the vendors' struggles will add up to an unprecedented user bonanza.

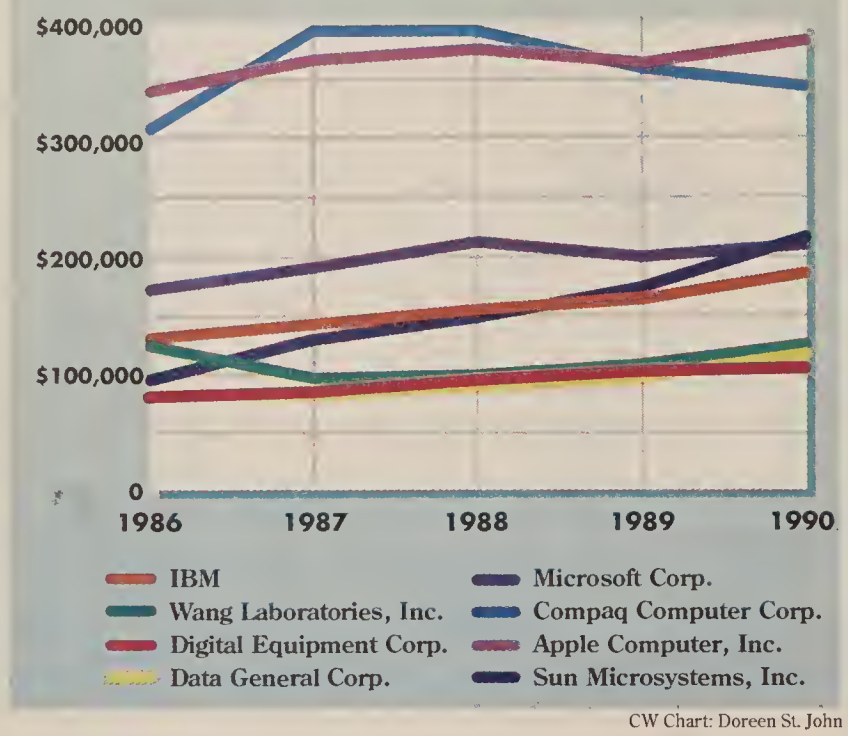
"Users are going to win and win big," Hallman said. "They're going to get a broader choice of dramatically improved hardware at lower and lower prices." Added to that, he said, increasingly standardized hardware is leading to "software that is more customizable — better able to be focused on an individual user's problems."

Every vendor in the industry is keenly aware that its corporate life depends on its ability to find out what users want and to deliver it as soon as possible, Hallman said.

"The consumer, particularly at the commercial business end," Skates said, "is going to make out like a bandit."

### Complex equations

*Revenue per employee is generally up among mainstream companies, indicating that standard business formulas may not provide the answers*




CW Chart: Doreen St. John

## A long, tough transition

Can the old guard catch the new wave in the computing industry? The evidence points to two companies that did — firms that until recently many had written off as yesterday's news: NCR Corp. and Hewlett-Packard.

But the same evidence says the transition is long, hard and costly.

At HP, top-down faith in the wisdom of the firm's engineering corps, which targeted reduced instruction set computing (RISC) as the platform commercial customers would want to use a decade before the commercial world decided they were right, was the first critical step, said Willem Roelandts, vice president and general manager of network systems.

"We're an engineering company first and foremost; that's one of our greatest strengths," he said. "Innovation is second nature here. We encourage people to be quick to try anything and quick to abandon it, with no penalty attached," he said.

Perhaps most critical, however, was the firm's willingness to spend half a billion dollars to develop its networkable HP Precision Architecture, a RISC technology. About 40% of the expenditure went toward building an emulation-based migration path for its customers.

Like Roelandts, NCR President Gilbert Williamson cited several key factors in a transition: constant contact with customers, unstinting attention to a clearly charted migration path, decentralized management and "tight focus on a clear vision. Our mistake in the 1960s was that we stuck with our old technology, protected our proprietary systems and let others obsolete us," he said.

Formidable barriers along the way included the fact that not all the technology to accommodate the NCR vision was yet in place, he said. The greatest difficulty, however, came in the sheer scope of "attacking so many fronts at once," as the firm moved to re-create itself. "You can't talk 'open' while pursuing the old proprietary thinking," Williamson said.

Neither firm is home free, their respective executives said. NCR, which will advance into the new market as a part of communications giant AT&T, will have to preserve its vision while going through the well-documented rigors of a merger. HP will be testing its mettle in the workstation market, among the most hotly contested niches in the already competitive computer industry. "We have to prove ourselves every day," Roelandts said.

NELL MARGOLIS

## Guard your words

Executives of the computer industry's leading old-guard firms last week expanded on their views of the dynamics impacting the industry:

"Our industry got spoiled with rapid growth and didn't really understand the concepts of high quality that you learn in other industries. Now it's clear that quality is going to be so important." — *Richard Miller, chief executive officer, Wang Laboratories, Inc.*

"No one knows for sure what open systems is, but whatever it is, it's better than being locked into proprietary systems." — *Ronald Skates, CEO, Data General Corp.*

"Our customers should not be concerned about our downsizing. Some of us lived through the 1982-1983 time period when we were dramatically downsizing the product line, and to be candid, we threw the baby out with the bathwater and ended up with operating problems in serving our customers . . . We swore we would never make the same mistake again." — *Jack Smith, senior vice president of operations, Digital Equipment Corp.*

"If you're going to win, you have to be the innovator, not the follower. There's always a price for innovation, and it can be painfully high — but it's ultimately worth it. No matter how hard, the other way around is harder." — *Gilbert Williamson, president, NCR Corp.*

"Empowerment of employees is a cultural question . . . It can't be a buzzword or an idea that a few progressive people have; it has to be part of the company's vision of who they are, in everyone's mind . . . You can't have empowerment unless people know there is not a penalty for trying and failing. The penalty should come for failing and not abandoning what made you fail." — *Willem Roelandts, vice president and general manager of network systems, Hewlett-Packard Co.*

"If proprietary systems continue to grow and provide profit, we will continue to fund them. We still have a very significant portion of our investment on System/390, the Application System/400 and OS/2, but even in that spending, we are moving more to supporting industry standard interfaces." — *Stephen B. Schwartz, vice president of market-driven quality, IBM.*

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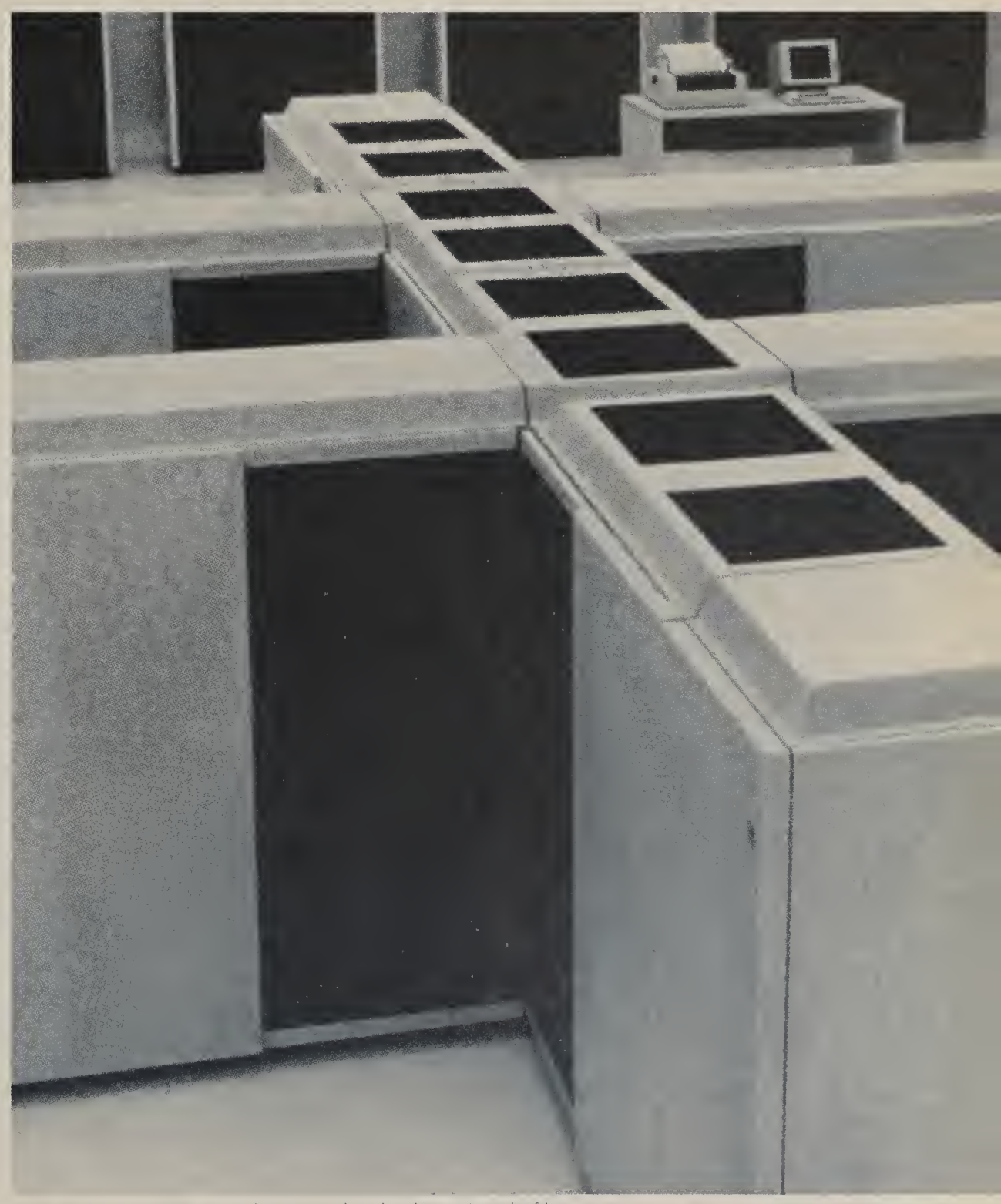

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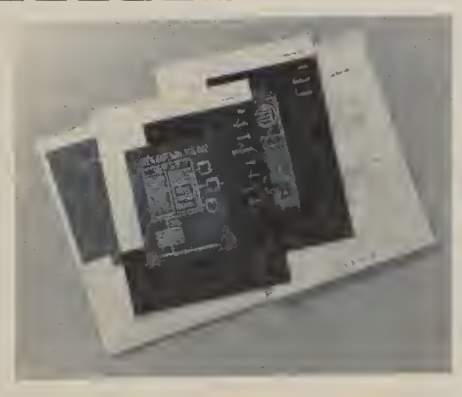

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# Novell sketches standards-based net strategy

BY JIM NASH
CW STAFF

Novell, Inc. publicly outlined its standards-based network management strategy for the first time last week. As part of the comprehensive management strategy — Novell's first — the company is publishing new application programming interfaces in a bid to jump-start third-party development of Netware management systems.

Large companies said they are ready and waiting for the networking products. A dearth of standards-based management tools, particularly for devices such as file servers, is only now being addressed by vendors, many of which had previously concentrated on wiring elements and internetworking devices, according to industry observers.

In March, Novell demonstrated products adhering to the strategy for developers [CW, April 1]. Software development kits supporting the new policy are shipping now, Novell officials said last week.

Developers can now sidestep the process of building their own interfaces when they create management tools. Their software would pass alerts about applications, files and physical elements on a network through Novell's interface and up to an IBM Netview console. Novell plans later this year to publish the message format used to pass alerts to higher level management tools, said Bernard Harguindeguy, product line manager for Novell's communications services.

"We can use all the management we can get," said Mike DeTuncq, a systems analyst at Arco Oil & Gas Co. in Dallas. DeTuncq said he is unaware of any tools outside of Fconsole and other Netware utilities that pass alerts for file-server problems.

The result should be customized network analysis that will not bog down networks with excess information, Harguindeguy said. It should also mean an abbreviated time to market for these applications, although Harguindeguy only said that new products should roll out next year. Beginning with Netware 3.0, introduced two years ago, the company included management agents, or software, that will accept data from third-party management tools supporting Simple Network Management Protocol (SNMP), Common Management Information Protocol and Netview. Under the new strategy, that information will be collected at and relayed from a desktop console.

"Our corporate direction is toward SNMP-based products," said Jeff Day, systems manager at Liberty Mutual Insurance Co. in Portsmouth, N.H. The strategy — basing management on SNMP and linking to Netview — "makes a lot of sense," Day said.

Peter Raulerson, president of Para Technology, Inc., a consulting firm in Bellevue, Wash., said new management software could be limited by the relatively small number of large companies having both Netview and Netware. Based on a study he conducted last spring, Raulerson explained, only about 20% of large companies said they would like to manage Netware from a Netview console.


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# Feds arrest 'logic bomber'

BY MICHAEL ALEXANDER
CW STAFF

SAN DIEGO — Federal agents arrested a disgruntled programmer last week for allegedly planting a logic bomb designed to wipe out programs and data related to the U.S. government's billion-dollar Atlas Missile program. According to law enforcers, the programmer hoped to be rehired by General Dynamics Corp., his former employer and builder of the missile, as a high-priced consultant to repair the damage.

Michael J. Lauffenburger, 31, who is accused of planting the bomb, was arrested after a co-worker accidentally discovered the destructive program on April 10, disarmed it and alerted authorities. Lauffenburger had allegedly programmed the logic bomb to go off at 6 p.m. on May 24 during the Memorial Day holiday weekend and then self-destruct.

Lauffenburger is charged with unauthorized access of a federal-interest computer and attempted computer fraud. If convicted, he could be imprisoned for up to 10 years and fined $500,000. Lauffenburger pleaded innocent and was released on $10,000 bail.

The indictment said that while Lauffenburger was employed at the General Dynamics Space Systems Division plant in San Diego, he was the principal architect of a database program known as SAS.DB and PTP, which was used to track the availability and cost of parts used in building the Atlas missile.

On March 20, he created a program called Cleanup that, when executed, would have deleted the PTP program, deleted another set of programs used to respond to government requests for information and then deleted itself without a trace, according to Mitchell Dembin, the assistant U.S. attorney handling the case.

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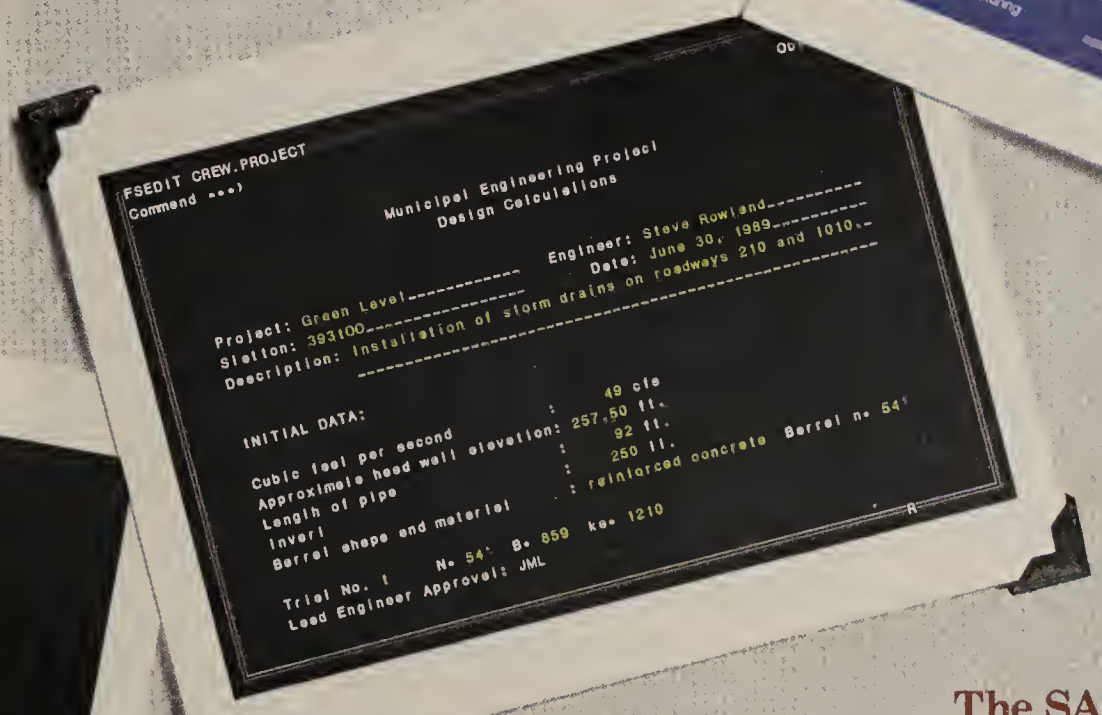


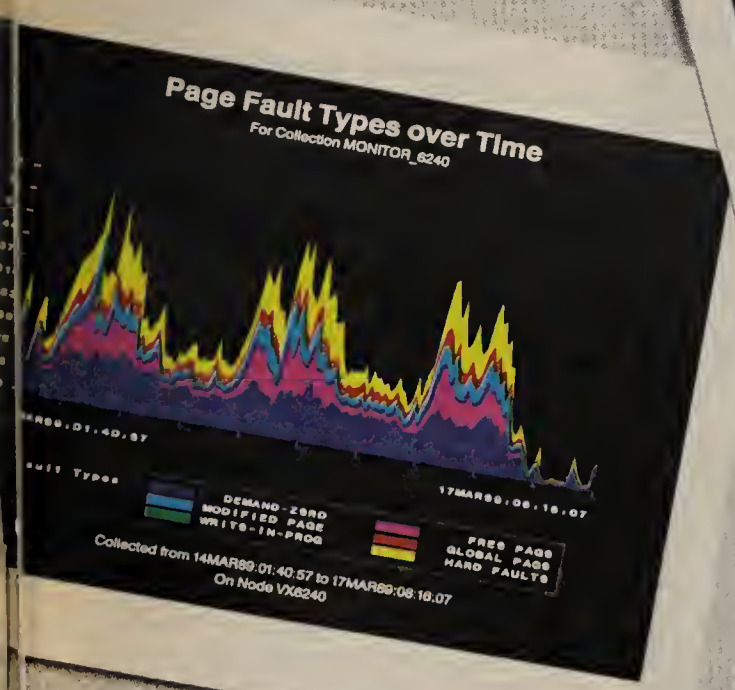


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# FTC may be probing Intel

BY JIM NASH
CW STAFF

Intel Corp. is reportedly the subject of a Federal Trade Commission (FTC) investigation into what some microprocessor distributors and component makers claim are questionable business practices.

One distributor, who accused Intel of unfairly cutting off his supplies last fall, said the FTC interviewed him two months ago about the incident. Haresh T. Israni, president of Tokyo Cobra Corp. in Anaheim, Calif., said he has not filed a complaint against Intel, but he cooperated with the FTC's questioning.

Two other businessmen, who also claim they have been wronged by the chip builder, said they have not been interviewed by the FTC but were not surprised to hear that another was.

A spokeswoman for Intel in Santa Clara, Calif., said the company is aware of one client who was contacted by the FTC for "a discussion on a wide range of subjects, not just Intel." She said the FTC has never contacted Intel regarding this or any other investigation.

The FTC would neither confirm nor deny that an investigation is pending.

Israni claimed Intel began using "strong-arm tactics" against his $40 million distribution business last August. He said company representatives told him "not to push the competition's product." Tokyo Cobra, he said, sells a variety of computer components, including math coprocessors from Cyrix Corp.

Cyrix makes a floating-point chip that is pin-compatible with Intel's 80387 product, said Millard Phelps, an analyst at Hambrecht & Quist, Inc. in San Francisco. Phelps noted that Cyrix is suing Intel for antitrust violations, and Intel is suing Cyrix for patent infringement.

"I started asking questions" of Intel. "Why couldn't I sell these other parts when my customers were asking for them?" said Israni, who also carried the 80387. He added that in October, Tokyo Cobra was cut off completely and has yet to receive another Intel shipment.

Jeff Solliday, president of Solliday Engineering Co. in San Francisco, corroborated reports from other industry sources that Intel has begun using "inducements" to get manufacturers to attach labels to their products stating that Intel components reside within. Solliday said he has not filed an FTC complaint and has not been contacted by the department.

He and another computer component maker who requested anonymity said Intel helps pay advertising costs for those who cooperate with the labeling program. Both sources said that in the past, Intel has taken into consideration those vendors that participate and those that do not.

"Those who have cooperated are allocated chips generously," Solliday said. The Intel spokeswoman said the company has no such inducement policy.

# DEC expands Cohesion line

BY MARYFRAN JOHNSON
CW STAFF

MAYNARD, Mass. — Digital Equipment Corp. pasted together some significant pieces of its Cohesion software development environment last week, announcing a common core environment for VMS and Ultrix, its Unix variant.

Also unveiled for delivery in November was a new version of CDD/Repository and the first signs of DEC's repository information model — a kind of road map describing the objects and their relationships within the repository.

"DEC is providing a lot more detail about Cohesion, getting specific about what is there, how it's going to work and when it will be delivered," said Vaughan Merlyn, a partner at Ernst & Young's Center for Information Technology and Strategy in Boston.

Other products announced — most slated for delivery early next year — were CDD/Administrator, a graphical user interface for repository administrators, and several computer-aided software engineering (CASE) tools for both VMS and Ultrix. DEC also unveiled its first Application Control Architecture Services, a kind of broker for enabling network integration and communication between VMS and Ultrix tools and applications.

The new version of DEC's repository drew support in upcoming product releases from several third-party vendors, including Andersen Consulting, Information Builders, Inc. and Cognos, Inc.

At Newfoundland Light and Power Co. in St. John's, Newfoundland, the promise of stronger, more transparent links between the DEC repository and Cognos' Powerhouse application development tools was welcome news.

"DEC's CASE strategy tends to be a little slow, but when they actually produce something, we'll be very interested," said Bob Blackmore, supervisor of systems and programming at the power company, which has been using the CDD/Repository as its corporate data dictionary for several years.

# Telephone failures tied to SS7 switch complexity

BY GARY H. ANTHES
CW STAFF

Simultaneous computer failures in the Washington, D.C., and Los Angeles areas last week crippled local telephone service for millions of people and renewed concerns about the way telephone companies test and back up their systems. The outages also bolster the arguments for regulatory changes that would foster more competition in local communications markets.

A computer malfunction attributed to faulty software cut off local telephone service for six hours in Washington, D.C., and parts of Virginia, Maryland and West Virginia. Computer users on private networks and those dialing long distance were unaffected, but local switched voice and data calls were for the most part blocked.

The Washington, D.C, and Los Angeles outages were among the most disruptive ever, and users and analysts said they indicate a lack of disaster recovery planning by the local telephone companies. After the nationwide 9-hour failure of AT&T's long-distance network last year, AT&T implemented a mechanism to offer alternative service quickly. The company also instructed its operators to give customers the access numbers of its competitors in the event of a similar failure.

Bell Atlantic Corp. said a problem occurring first in its Baltimore Signal Transfer Point resulted in the massive transmission of data along its common-channel Signaling System 7 (SS7) network. The problem cascaded to computers at three similar facilities, knocking out service to 6.3 million lines

The Los Angeles hit, identified by Pacific Bell as an "equipment malfunction" and apparently unrelated to the East Coast problem, also affected an SS7 network. SS7 is an out-of-band networking technology that provides paths separate from data/voice paths for the movement of call status and network control information.

### More protection needed

Hank Levine, a Washington, D.C., attorney who represents large telecommunications users, said that although networks use individual components that are ever more reliable, the increasing complexity of networks as a whole may leave them more vulnerable.

"The lesson for large users is that they have to take more steps to protect themselves. They need multiple long-distance carriers. And it means we need more local competition, more alternatives at the local level," Levine said.

Local exchange carriers are at an earlier stage of deployment of SS7 than are long-distance carriers, said Berge Ayvazian, communications research vice president at The Yankee Group. "They don't have the hardware and databases needed [for quick disaster recovery]. They are now being very aggressive, and they need to be more cautious."

Ayvazian said earlier local disasters such as the 1988 fire at an Illinois Bell switching center spurred users to install satellite-based backup systems. He said the outages last week will also spur demand for changes in regulations to allow alternative local service providers to link their networks into the central offices of the Bell companies.

Metropolitan Fiber Systems, Inc. (MFS), which provides local communications services in competition with the Bell companies, has petitioned the Federal Communications Commission for the right to connect to local Bell networks via Bell central offices. Last week, MFS President Royce Holland said that move would offer users a communications alternative and could also prevent protracted network failures by allowing service backup agreements between carriers.

# AMD to unveil notebook chip

Advanced Micro Devices, Inc. (AMD) is expected to introduce today its 25-MHz AM386SXL microprocessor, a notebook computer chip designed and priced to go head-to-head with Intel Corp.'s 20-MHz 80386SX. The AM386SXL will stretch battery life to 4.4 hours. Intel's 386SX consumes battery life in 2.75 hours, according to AMD.

Tom Thornhill, an analyst at Montgomery Securities, said AMD's chip compares favorably with the Intel version. However, the market appears to be shifting away from SX-generation chips toward Intel's 386SL, which actively manages power consumption on a portable, he said.

The AM386SXL is priced at $89 each in 1,000-unit orders. AMD said it will reduce its price 30% within a year and at least 20% every year afterward for five years.

Intel typically cuts back prices 4% or 5% each quarter for a similar year-end reduction, Thornhill said.

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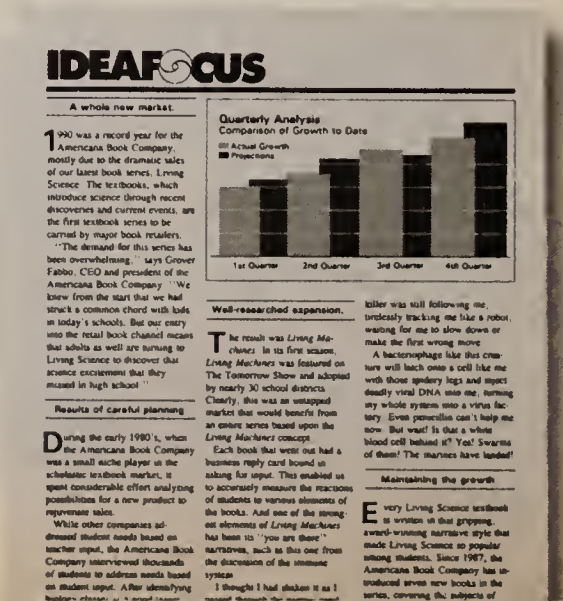

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Quarterly Analysis
Comparison of Growth to Date
Actual Growth
Projections
1st Quarter 2nd Quarter 3rd Quarter 4th Quarter

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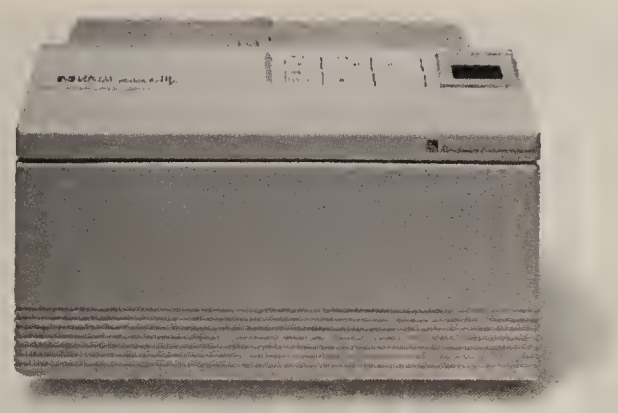

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# IBM forms Systemview business partner team

BY ROSEMARY HAMILTON
CW STAFF

IBM filled in another piece of its Systemview strategy last week by announcing four key business partners that will assist IBM in the development of the systems management architecture.

Also, a company executive said, IBM will deliver more Systemview documentation this year, as promised. Initial information on the Systemview data dimension is expected to be shipped toward the end of this quarter.

IBM announced Systemview in September 1990 as the Systems Application Architecture initiative to provide guidelines for all aspects of systems management, such as operations, performance and configuration management.

The Systemview team consists of Bachman Information Systems, Candle Corp., Goal Systems International, Inc. and Platinum Technology, Inc.

This inner-circle setup is similar to a third-party group IBM anointed in 1989 to help it establish standards for AD/Cycle, its application development strategy. As was the case when the AD/Cycle team was launched, the announcement set off a round of confusion as companies both on and off the team jockeyed for position.

At least two third-party software suppliers said they turned down IBM's offer to be part of the Systemview team because the costs associated with it would outweigh any near-term revenue the deal would generate.

Mario Marino, executive vice president at Legent Corp., said IBM wanted his company to pay a fee beyond royalty payments to become a Systemview partner. The expected fee, along with the demands in time and resources that participation would have required, caused Legent to say "no thanks," Marino said.

Marino said Legent has kept the door open and will continue to support the Systemview strategy with compliant products.

While IBM declined to comment on the financial arrangements with the Systemview partners, both Goal Systems and Bachman insisted that no payment was required of them.

> "WE BELIEVE THE payment schemes were different [for each vendor]. IBM is acting like any other vendor would in forming partnerships."
>
> BARBARA SANNERUD
> GARTNER GROUP

"We believe the payment schemes were different [for each vendor]," said Barbara Sannerud, an analyst at Gartner Group, Inc. "IBM is acting like any other vendor would in forming partnerships."

The Systemview team members insisted their new roles will give them an advantage over competitors on the outside because not only will they have immediate access to the Systemview specifications, but they will also help create them.

Outsiders interviewed last week said that because IBM will be publishing all Systemview specifications, they will achieve compliance within a reasonable time frame. What is more, they claimed their outside status will give them more flexibility to support other strategies, such as Digital Equipment Corp.'s Polycenter.

Meanwhile, Boole & Babbage, Inc. sent out a flurry of announcements last week on its Systemview development agreement with IBM. While IBM did not include the firm on its list of key players, Boole & Babbage has been working with IBM on Systemview for nearly a year.

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PC Magazine, 12/11/90 (Ziff-Davis Publishing) "9600-BPS MODEMS Breaking the Speed Barrier-PC LAN Labs tests seven rapid-fire modems complying with V.32, V.42 and V.42bis standards."

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## ADVANCED TECHNOLOGY

# Fight against AIDS takes to the screens

*Scientists view computer-aided drug design as important new weapon in the battle against the deadly virus*

BY MICHAEL ALEXANDER
CW STAFF

Research into designing drugs that can be used to thwart acquired immune deficiency syndrome is moving from laboratories to computer screens.

Computer-aided drug design is a radical departure from traditional methods of finding drugs, which involve random testing of thousands of chemicals. But scientists said computers may prove to be the most potent weapon in the fight against AIDS.

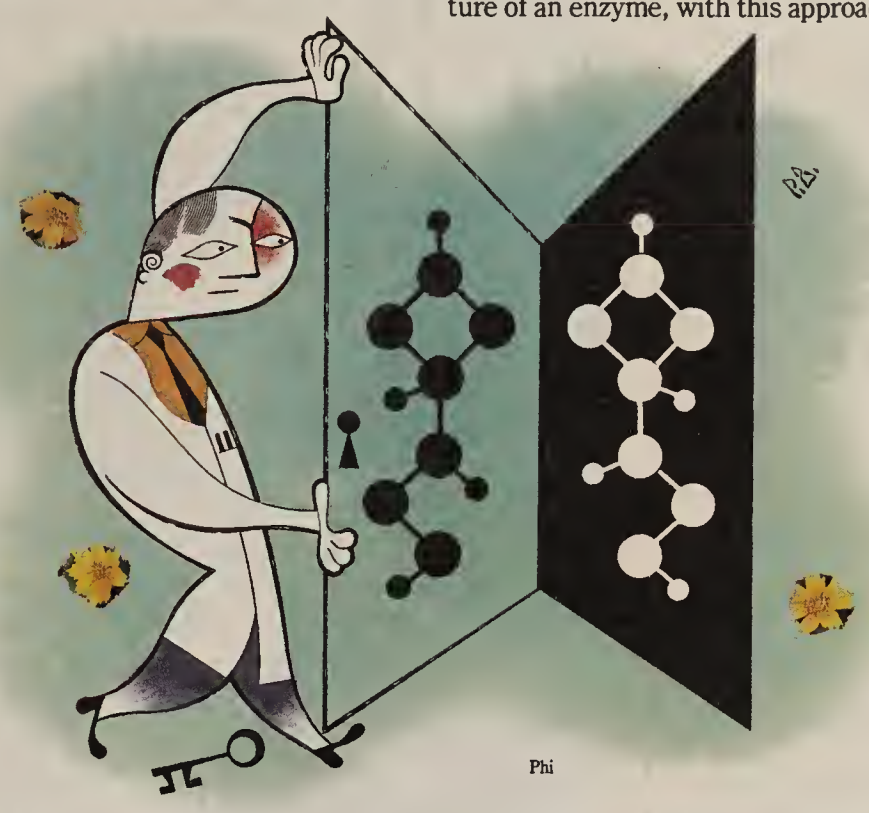
A team of scientists at the University of California at San Francisco, led by chemist Irwin D. Kuntz Jr., used computers, specially developed computer programs and a detailed knowledge of the critical HIV enzyme of the AIDS virus to locate the most promising chemicals to test.

The team used a tailor-made computer program, developed by Kuntz and fellow researcher Renee Des Jarlais. The program was designed to search through a database of structural images of more than 60,000 existing drugs, looking for molecules that are mirror images of the HIV enzyme. A compound with the right shape — one that fits snugly in the enzyme's machinery — cripples the enzyme. Studies have shown that inhibiting the enzyme, called a protease, deactivates the AIDS virus.

The computer program turned up a compound called haloperidol, a powerful antipsychotic drug, as having the best fit. The scientists then returned to the laboratory and confirmed that the compound actually binds to the HIV protease and inhibits it.

However, the discovery has no immediate benefit because the level of the haloperidol needed to block the action of the AIDS virus is 1,000 times greater than the typical dose — enough to kill a patient, Kuntz said.

"The high concentration needed indicates that haloperidol would be a poor finished product, but it is acceptable as a starting point," Kuntz said.




### Rapid way to find new drugs

What is perhaps more significant about the finding is that it validates a new and rapid method to identify potential AIDS drugs, the scientists said.

"This has enormous potential for drug design," said Charles Craik, a co-researcher. "This is the first time that the structure of an enzyme has been used to locate an inhibitor. If you can get the three-dimensional structure of an enzyme, with this approach you can find a compound that will inhibit it."

The computer program, called Dock, searched for chemicals with a shape exactly fitting an indentation in the protease, as a key fits into a lock. The lock is the active site of the HIV-1 protease, an enzyme that cuts up viral proteins that are essential to the functioning of the virus. The protease is a sort of molecular scissors that snips out the proteins that are needed to make a new virus in the same way a dressmaker cuts up fabric. Compounds that bind to the HIV protease block this activity, preventing the enzyme from creating new viruses and at the same time exposing them to attack by the body's immune defenses.

Dock can only search for a suitable blank key — a template that chemists must modify to make more effective, Kuntz said. The chemical modifications are akin to cutting grooves and ridges into a blank key so that it fits a lock precisely.

After narrowing the list to 10,000 compounds from the 60,000 compounds contained in the Cambridge Crystallographic Data Base, Des Jarlais used Dock to evaluate each compound for its potential fit.

Des Jarlais, Kuntz and co-researcher Paul Ortiz de Montellano then used a computer program called Midas Plus to inspect the 200 most promising chemicals culled by Dock. Midas Plus, also developed at the university, allowed the researchers to examine a stereo image of each chemical as it was fit into the enzyme's lock.

Compounds that were hard to work with or that were difficult to modify were rejected, thus narrowing the list of potential inhibitors to 20. The researchers settled on haloperidol, a close relative of one of the 20 best compounds.

The team of researchers has developed a less toxic, but still deadly, variation of the chemical compound. Kuntz said that he hopes pharmaceutical companies that make variants of haloperidol will screen them to see if any are capable of halting the reproduction of the AIDS virus.

If an effective AIDS drug is found, it will be one of the first using computer-assisted drug design, he said.

# Hot on the trail of what the nose really knows

BY MICHAEL ALEXANDER
CW STAFF

The human nose knows more than it is generally given credit for. In fact, some researchers say that by studying how mammals smell and the way the brain remembers odors, they may one day be able to create computers that are capable of understanding speech, recognizing images and even sniffing odors.

Researchers at the University of California's Bonney Center for the Neurobiology of Learning and Memory at Irvine, Calif., for example, have created a computer simulation of the brain's odor-recognition circuitry.

"We're taking brain circuits and analyzing their computational properties," explained Richard Granger, a professor and computer scientist. "It turns out our brain circuits are performing algorithms that can be analyzed."

Granger developed his computer simulation of smell based on studies by Gary Lynch, a neurobiologist and authority on the mechanisms of learning and memory at the Bonney Center.

The computer model was designed to mimic the neurons in the brain's olfactory cortex, where odors are recognized. The olfactory cortex is the evolutionary precursor to the brain's neocortex, where vision, hearing and other senses occur.

The researchers said they hope that by studying the process of smelling they will uncover clues to other sensing mechanisms and how we remember what we have sensed.

"We can't mimic the brain yet, but it stands to reason that by steps, we will be able to create better computers by understanding the brain's effective performance," Granger said.

These discoveries could eventually be used to develop computers capable of following the trail of an oil spill to its origin, process sonar signals or track signals sent through space, Granger said. "Mammals are extremely good at this sort of signal tracking — look at how a dog tracks by smell — and are good at recognizing and storing [signals]."

### Unexpected findings

Granger's simulation has turned up some surprising results. The algorithms that were developed using the model have been used to trigger similar responses when applied as electrical patterns to the olfactory cortex in the brains of laboratory rats. As the computer model is being refined, it is more closely and predictably simulating how mammals distinguish smells and rank them.

This has lead Granger to think that computer simulations like his may also help reveal how the brain's circuitry works. One day, computer simulations that mimic the brain's circuits could give us enough insight into how the brain works to develop devices that could be implanted in the brain to correct malfunctions, he said.

Granger and Lynch have also worked with Adaptive Solutions, Inc., a neurotechnology development company based in Beaverton, Ore., to create a neural network chip based on their research. The chip was designed to be used in voice and image recognition systems. The main advantage of the chip is that it is significantly faster than the software simulation and has faster computational capabilities than those of human neurons, Granger said.

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## EDITORIAL

# Competitive push

Maybe it's the federal government's track record of legislation and policies designed to help business compete more effectively. So often, these efforts have resulted in nothing more than higher consumer prices and less pressure on U.S. companies to perform at their peak.

Ever wonder why U.S.-made pickup trucks keep the same design literally for decades, while foreign automakers retool and redesign every few years and still can't make big dents in the U.S. market? It could have something to do with a whopping import tariff that the Big 3 have had working in their favor, a tariff that makes those foreign trucks as expensive as they are.

Whatever the case, when the federal government starts talking about new policies to increase the competitiveness of U.S. companies, it makes a lot of people nervous.

Still, the desire lingers for the federal government to posit some sort of high-tech policy or, as we saw more recently, a manufacturing competitiveness policy [CW, June 24]. If only there was a way of keeping the politicians and the politics out of such an effort.

*Computerworld* has always been an advocate for its readers, who for the most part are customers of the vendors. As such, here's our two cents on what's best for the government to do vis a vis the computer industry on the behalf of the consumer:

- Make a strong statement that the feds will protect intellectual property rights (such as software copyrights) abroad as aggressively as the feds are doing so here at home.
- Stay out of the way of programs designed to fund specific high-tech industry segments, such as manufacturing systems, and leave the direction of capital flow to the marketplace. These efforts invariably yield to pork barreling.
- Fund a blue-ribbon panel of educators and business leaders to study what the education systems in the Far East and in Western Europe are doing to prepare their youth for an Information Age economy. The panel's report gets a full congressional hearing.
- Restore monies for federally funded fellowships (which dropped 80% from 1970 to 1990), and tie the aid to postgraduate teaching requirements.

The federal government also needs to recognize what looks like a growing tide of protectionism within the European community as its unity year of 1992 approaches. ICL/Fujitsu found itself locked out of certain European Economic Community-funded projects once ICL sold out to the Japanese. The only effective way to deal with such protectionism, in Europe and Japan as well, is to weed it out of our own system first.

These are simple steps, the most costly of which go to investments in human capital. Whether ideas like these take hold or not, any industrial policy must recognize the inherent frailty of politicians here and elsewhere and therefore take them out of a process in which open markets should play the most significant role.

## LETTERS TO THE EDITOR

### Mainframe credit

In Mark Ames' article "Mainframe stalled in wake of micro performance gains" [CW, May 6], he states that the "PC still has a 3-to-1 price/performance ratio advantage over the mainframe."

Using the cost per mainframe MIPS concluded by Mr. Ames — $95,000 for mainframe computers and $2,500 for PCs — let us look at the cost of computing over a three-year life for each CPU.

As the author points out with his comments about utilization, we should be measuring what it costs for the computing to be done, not for the capacity bought. So assume a 70% utilization for the mainframe processor and 5% for the PC processor and also that the mainframe is up seven days per week, 24 hours per day, 12 months per year and that the PC is used only during five 8-hour workdays per week.

So, during a three-year period, the CPUs on the mainframe and PC will be busy for 18,396 and 312 hours, respectively. The cost to provide this by one MIPS capacity on each is therefore $5.16 per hour for the mainframe and $8.01 per hour for the PC.

These calculations leave out all the large costs for facilities and support for the mainframe and the large support costs for PCs. They also ignore the cost of software development and maintenance in the two environments. However, in my opinion, the cost of computing using PCs is expensive when compared with using a mainframe.

Of course, the main criterion must be the value received from the computing relative to its cost, and there is no doubt about the value provided by many first-class PC applications.

*Ron Foyer*
*President*
*RPF Systems Consultants, Inc.*
*Calgary, Alberta*

### Ergonomic pros?

Your article "The hunt for ergonomists" [CW, May 13] was on the wrong track in a number of respects.

There are a number of "professional ergonomists' associations" worldwide. The largest organization of ergonomists is the Human Factors Society, based in Santa Monica, Calif. This group has been in existence since 1957 and now has about 4,800 members, mostly in the U.S.

There are a number of undergraduate and graduate programs in ergonomics/human factors at universities throughout the U.S. They produce professionals who are highly qualified to practice ergonomics.

In general, persons qualified to practice ergonomics are those who have undertaken such studies and have relevant experience in the field.

*Lynn Strother*
*Executive administrator*
*Human Factors Society*
*Santa Monica, Calif.*

### JIT stands up

Regarding "Manufacturing IS not yet in gear, study finds" [CW, May 20], I believe what is being seen here is not so much that centralized manufacturing resource planning (MRP) systems are not needed. Rather, with manufacturing in the U.S., there has been a sea change occurring for some time now.

The change is just-in-time (JIT) manufacturing and all of its attendant changes in supplier relationships, inventory handling and quality control changes. An electronic data interchange broadcast from an area as close to the final use point as possible in the smallest lot size manageable is progressively taking over the function of centralized MRP.

As is the case in many systems, removal of excess lines of control results in great gains in efficiency. In this case, the progressive process of cutting the central office out of the feedback loop and the order cycle except where necessary is yielding great benefits for assembly manufacturers.

I do not see that manufacturing is downscaling its use of technology, as would seem to be the case from reading the article. The acquisitions are in the areas that fit into the new paradigm of JIT, and the IS departments are slowly being made aware of what the needs of the new paradigm are.

Local, loosely coupled subsystems will continue to grow in importance to serve their rapidly changing needs in a sector where only the nimble survive.

*Brian Hanley*
*Senior software engineer*
*Synon, Inc.*
*Larkspur, Calif.*

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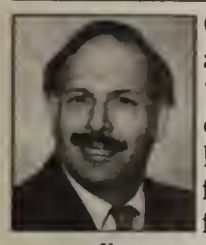
Computerworld *welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor In Chief,* Computerworld, *P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701. Fax number: (508) 875-8931; MCI Mail:* COMPUTERWORLD. *Please include a phone number for verification.*

# Don't let the big ones get away

BY LARRY M. SINGER



Only a short time ago, the term "strategic project" became the latest buzzword for frustrated information systems directors looking for an easy and logical method of prioritizing stacks of project requests.

In theory, the strategic project concept was better than the "squeaky wheel" approach, which favored the pet ideas of the loudest vice presidents. It seemed more logical than the first-in, first-out procedure, where any request older than 10 years finally got top priority. It was even more sensible than the old but reliable flip of a coin.

Unfortunately, no one quite knew what the impressive term "strategic" meant, and before long, every user had caught on to the fact that this was the way to classify a project if you wanted IS to circle the wagons quickly.

The accounting manager called any project that had a hard cost justification "strategic," while the manufacturing manager decided that strategic projects were ideas to speed up his assembly line. Luck, politics and black magic were still in control, although IS managers were loath to admit it.

"Doing the work right" is a popular slogan, but that's only half of the equation. "Doing the right work" is the key that will separate successes from failures in this decade. The emphasis on quality and productivity is admirable, but the highest quality and greatest productivity spent on the wrong projects will still lead to failure.

A project is strategic only if it directly affects the company performance by accomplishing at least one of six missions:

- Providing a competitive edge.
- Significantly lowering the cost of doing business.
- Improving the quality of the product or service to a noticeable degree.
- Performing a function or process necessary for the organization's continued existence.
- Shortening the product development life cycle.
- Providing internal information that helps decision makers make more-accurate business choices.

Paul Fisch

Strategic projects don't have to be big, take a lot of time or cost a lot of money. They can range from small, one-line coding changes to multiyear development projects. They can be highly visible, but sometimes they are totally transparent to the user community. They can use any machine from a PC to a supercomputer. In some cases, they may not even involve a computer at all but simply an idea for a better way to use existing information.

Strategic is not just a synonym for necessary. Many projects that are necessary are not strategic. It may, for example, be necessary to convert from an old, inflexible database to a relational model that allows future growth, but the conversion is not strategic. An error in a payroll system must be fixed, but the need does not fit the strategic mold.

What we're talking about here is not just semantics. By calling everything that has to be done "strategic," we're obscuring and denigrating the true power of IS. There are projects that are not strategic that must be done and done quickly, but we need to recognize that fact and find another label for them. Strategic is too important a word to toss around lightly. Properly applied, it is the key to making IS a corporate asset, rather than a corporate expense.

---

Singer is the author of two books on information technology and the *McGraw-Hill Guide to Communications for MIS Professionals.*

# What supplier wouldn't love tiered pricing?

**READER'S PLATFORM**

BY CHUCK MORGAN

Yesterday I received a letter from my cable television company, notifying me that it was implementing "tiered pricing" for its cable service. Naturally, I called my sales representative immediately to see what sort of financial impact it would have on my existing service.

He explained that the company is trying to stay current in the "entertainment software/service" environment, so it is following IBM's lead and pricing its cable service just as IBM has tier-priced its software.

He said my present costs will not change but I am now licensed to use their service only on a 19-in. nonstereo television (Class B). If I choose to upgrade my present set to a 20-in. or 21-in. set (Class C), I will be required to pay the difference between my present cost and the then-current cost for Class C cable service. Likewise, buying a 21-in. set with stereo will put me in Class C/S, for which there again will be a price difference.

Of course, I asked how he could possibly justify this sort of pricing structure, since my purchase of a new TV will not increase the company's costs in any way. The sales rep said that I would be deriving "greater entertainment enjoyment" from a larger set, and therefore, it's not fair that I should pay the same monthly charge as someone who receives cable service via a 13-in. black-and-white set.

Perceiving that I didn't appreciate the reasonableness of the company's position, he went on to explain that the service department would probably also experience a heavier load.

"How do you figure that?" I asked.

With a larger television, he explained, the total number of in-home viewers would probably increase and, with more viewers, there would be more questions to answer and more concerns with picture quality, content, programming hours and so on. When I tried to assure him that I would be the only one making any service calls, he said experience had proven otherwise.

Well, I could see that I was stuck with the company's arrangement. But I couldn't resist one last question: "I know that by buying a bigger TV, I'm not increasing your costs at all. There seems to be no more justification for pricing cable service like this than for a car dealer to base his prices on the size of his customer's family. Is this just a scheme to squeeze more revenue out of your customers?"

He didn't answer. He didn't have to. I know he was smiling a smile I've seen before.

Yes, the tale above is a fable, although not a particularly far-fetched one. If the cable companies aren't already working on this type of scheme, probably the only reason is that they can't track the type of television we're using — yet.

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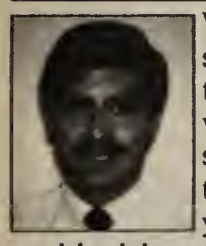
Morgan works in computer operations administration at the Garrett Engine Division of Allied-Signal Aerospace Co. in Phoenix.

# Don't worry, it's only your career at stake

BY MICHAEL B. COHN



What would you say if I asked you to name your worst fear? Aside from going to the dentist, you'd probably say it's giving a big presentation, right?

Well, if you are very lucky, you won't ever have to give a big presentation to the American Dental Association, but chances are that sometime during your information systems career you'll have to get up in front of a group and present something: an explanation of why the old system doesn't work, a sales pitch about a new system, an explanation of why the new system doesn't work.

Some folks leave success to chance. But if you learn the secret of good presentations, you'll have the inside track on the career ladder. Otherwise, you may get stuck in a rut or, even worse, have to settle for a job in IS management.

The secret isn't to stay up for many nights agonizing over every slide and technical transparency. The real trick is simply to recognize that all IS presentations are basically identical.

Just build one all-purpose presentation. Make sure it includes each item from the following list. Do it once, stick it in your drawer, and use it for the next decade or two.

**1. The Joke**

Everyone hopes you'll open with a really good joke. However, everyone knows you'll open with a really bad joke. But that's OK. Everyone tells them, everyone's heard them a million times, and everyone expects to hear them again. In fact, don't even waste your time telling the whole joke. Just go with, "So the doctor said, 'You're ugly, too,' " and then move on.

**2. The Agenda**

No one ever reads it, but you have to have one. Never forget to put up a slide or overhead of your agenda.

That's because everyone then gets to yell, "Focus," or "Louder" or "Hey, your head's in the way," which is an excellent tension reliever. If you forget the agenda slide, they'll take their tension out on you.

**3. The Organizational Chart**

People hate organizational charts even more than agendas. But everyone expects to see one. If you don't show one right away, people will get all fidgety, wondering what happened to it.

You can kill lots of time walking through a big, busy organizational chart, especially if your name is in a box all the way at the bottom. But if you're pressed for time or you don't have one, don't panic. No one ever really looks closely at these things. So when everyone assumes you're about to put up an organizational chart, just put up anything even remotely shaped like one, such as a Christmas tree or your Aunt Martha from Milwaukee, and everyone will be happy.

**4. The Busy Chart**

Nothing slows down a presentation more than having to explain something. That's why you should never put up pie charts or bar charts or nice neat slides with lots of white space and clear labels. People are liable to try to figure them out.

Stick with ambiguous stuff like entity-relationship models or assembler macros or network diagrams that look like a map of all the state highways in Pennsylvania. You'll likely get away with it — unless you happen to be in Pennsylvania, and even then the worst that can happen is that someone will ask for directions.

**5. Question and Answer**

If you've made it to this point, the only thing left that can screw things up is a tough question. Besides, if you get people started on questions, you could be up there all day.

So this is what you do. Take that first question from the front row. Make sure you don't repeat the question, and instead, at the top of your lungs, fire back whatever pops into your head, pounding the podium. No one from the second row back will have any idea what the question was, but they'll all be quite sure that they don't want to ask anything remotely like it. That should put a quick and quiet end to the Q & A and the whole miserable experience.

---

Cohn is trying to be a computer salesman in Atlanta.

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HARDWARE SHORTS

## DEC, Xerox ink referral agreement

A joint referral agreement announced recently by **Digital Equipment Corp.** and **Xerox Corp.** is aimed at coordinating market efforts in the production printing arena. The agreement, which will promote cross referrals and joint sales calls between the two companies, will increase shared expertise and integration efforts, the companies said.

**IBM** has designated the **Sears Business Center** units in Washington, D.C., and San Diego as RISC System/6000 Complex Systems Integrators. This will enable the reseller to offer IBM's Unix-based workstation to its customers, according to the companies.

**Sequoia Systems, Inc.** recently announced a new partnership with **Sumitomo Electrics Industries Ltd.**, which will be reselling Sequoia's Unix-based fault-tolerant computers in Japan and other countries.

The memorandum of understanding between the companies includes options for joint development of future products.

Sumitomo was the first company to manufacture and ship a Unix-based workstation in Japan.

# Users make ES/9000 choice

*Customers stay out of analyst/IBM debate over hybrid's acceptance*

BY ROSEMARY HAMILTON
CW STAFF

While industry observers and IBM express different opinions on the acceptance of the Enterprise System/9000 high-end mainframes, customers are making their own choices without regard to this debate.

IBM executives interviewed recently insisted the so-called hybrid models of the new mainframe line were a big success in the fourth quarter of last year and implied that this would still be the case if not for the current weak economy.

Meanwhile, several market analysts said the hybrid models, which are based on older 3090 J series technology, would not be a big hit even in robust economic times. Some analysts maintain that sales were good last year because of a pent-up demand and preannouncement orders.

### What's the point?

At customer sites, however, some information systems executives have installed hybrid models and consider them a solid choice, while others said such a move would be pointless. In short, IS executives are juggling a variety of financial and capacity concerns and then picking the system that makes the most sense for them.

For example, Kaiser Foundation Health Plan in Walnut Creek, Calif., which operates four 3090s, recently installed an ES/9000 Model 720 and intends to bring in a top-of-the-line Model 900 in the first quarter of next year, said John Nickerson, manager of computer services.

The 720 comes with a new frame, power supply and other environmentals but uses a 3090 600 J engine. The 900 will be based on a new-generation engine, formerly known as Summit. Since the 720 has the same processing power as a 600 J, IBM has pitched it as a way to get onto the ES/9000 platform.

However, in Kaiser's case, the Model 720 was selected because IBM offered it as part of a two-step upgrade from a 3090 Model 400 with "some price advantages to us," Nickerson said.

At Mellon Bank Corp., however, the Model 720 was just not appealing, said David Moore, a senior vice president.

"It didn't meet our needs," Moore said. "What I need is additional horsepower, so it wouldn't have made sense."

Instead, Moore's plan is to wait for the true ES/9000 technology. "We play at the very high end of the game, so we've looked at the 900, which isn't available until later this year. So, we have a target date for that time."

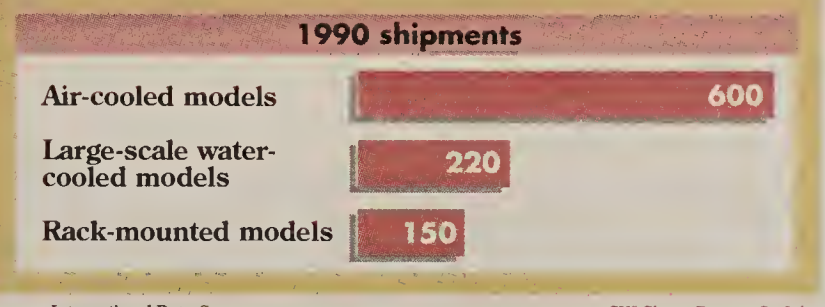
CSX Corp. selected a Model 720 to replace a high-end 3090 on which a lease had recently expired. Doug Underhill, a CSX vice president, said that since the company had to do something about the expired lease, it made sense to upgrade to the newer platform, even if it didn't come with a new engine.

Underhill said he intended to proceed with a plan to replace his several other 600 Js as their leases expire.

"Leases will be coming to an end in [the Baltimore data center] in 1992, so our position then would be to look seriously at a 900-size machine."

**Good times**

*The last few months of 1990 — before what IBM acknowledged was a slowdown — saw 970 Enterprise System/9000 shipments worldwide*




Source: International Data Corp. CW Chart: Doreen St. John

### Extra miles

In the meantime, however, Underhill expects to get more mileage out of his J models. "We will continue to use them," he said. "They served us well, and they are working well."

David Anderson, vice president of data processing at King County Medical Blue Shield in Seattle, is another customer who expects to stick with his 600 J for the near future. He considers the 720 to be "basically the same as a 600 J" and as a result sees no reason to upgrade.

Anderson recently loaded the 600 J with more expanded and central storage and is looking at some of the ES/9000 functions that can be retrofitted on high-end 3090s. "The 600 J has some bridge capability," Anderson said. "We are trying to maximize the utilization of this computer."

# DASD Advisor adds enhancements

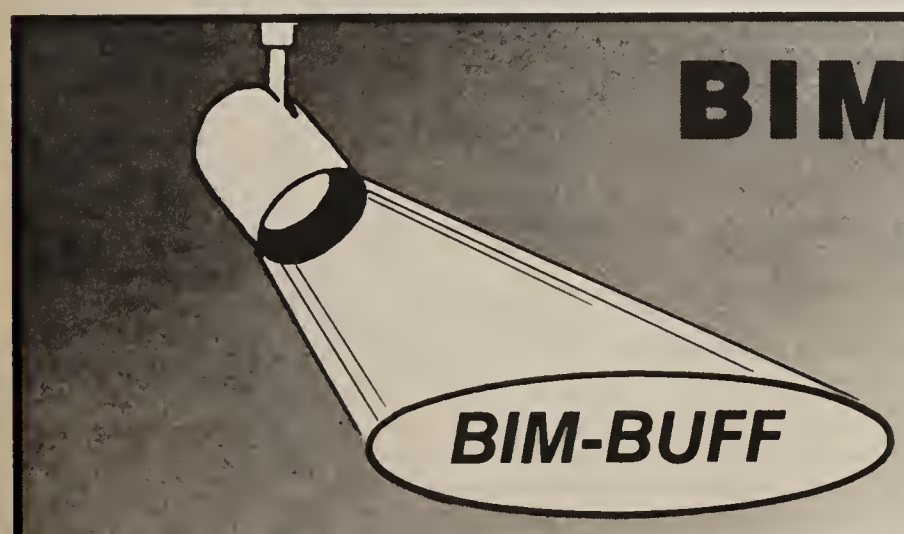
SUNNYVALE, Calif. — Boole & Babbage, Inc. enhanced its 4-year-old DASD Advisor product recently, giving it the ability to simulate conditions in which large data sets are moved from one disk drive device to another.

DASD Advisor 2.3.0 now contains an Impact Analysis module that allows users to build "what-if" models about slowed system performance. Claiming that most systems delays are caused by what happens in the I/O subsystems, Saverio Merlo, Boole & Babbage's vice president of marketing, said the module will help to pinpoint bottlenecks and conflicts and will help to analyze them. It will then list some potential solutions to resolve the problem, he explained. The older product already contained some expert-systems code, he added.

### New features

The new release supports IBM's System Managed Storage (SMS), the new IBM Escon features and the IBM 3990 disk controller's fast-write feature.

According to Boole & Babbage, DASD Advisor will also collect and display statistics on I/O use, based on read/write records that are stored within the IBM 3990 disk-controller's cache memory. The software, which is priced between $19,000 and $31,000, can also be used by the more than 400 current corporate users of DASD Advisor, according to Merlo.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SOFTWARE SHORTS

## SAP deals total $1.6M

**SAP America, Inc.**, a subsidiary of **SAP AG**, has received two contracts totaling $1.6 million for the installation of its R/2 System — an on-line, real-time applications mainframe software system.

**Hitachi Data Systems Corp.** will implement R/2 throughout its operations in Asia Pacific/Latin America, Canada, Europe and the U.S. The company will install the R/2 Basis core module and modules for cost and managerial accounting, production planning and control, sales and distribution, plant maintenance and materials management. **Teradata Corp.** also signed a contract for the R/2 Basis system, as well as for several financial, sales and distribution modules. The R/2 System is composed of 10 integrated modules and is used at mainframe installations worldwide.

Three vendors have rallied together around the object-oriented technology flag: **Sequent Computer Systems, Inc.**, **Parcplace Systems, Inc.** and **Versant Object Technology** have all signed agreements whereby Sequent's Symmetry 2000 multiprocessor architecture will operate with Versant's Object Oriented Database Management System and Objectworks/Smalltalk object-oriented development environment from Parcplace. The products will allow users to develop complex database applications for both commercial transaction processing and design automation. The Symmetry series runs Dynix/ptx, Sequent's version of AT&T's Unix System V.

**Language Processors, Inc.** (LPI), a provider of applications development tools for Unix platforms, recently revised its existing market and distribution agreement with **Data General Corp.** Under the new contract, DG will market and distribute LPI's line of language compilers and interactive source-level debuggers for DG's Aviion workstations and servers.

# Prime shifts focus to software, services

ANALYSIS

BY SALLY CUSACK
CW STAFF

A grim prognosis frames the future for many traditional midrange computer companies, and Prime Computer, Inc. is no exception.

Having posted a 36.6% revenue loss for its Computer Systems Business Unit in first-quarter 1991, Prime is trying to provide its installed base with enough software and services to keep them happy until they can be successfully wooed to Prime's newer Unix-based midrange platforms.

"Prime is following a similar path to Wang [Laboratories, Inc.]. The hardware side is gone," said Karlyn Kilroy, midrange analyst at Technology Investment Strategies Corp., a market research firm based in Framingham, Mass.

"Customers can expect maybe one more platform or one more series, but that is it. Prime wants to be in the software and services business," Kilroy said.

Kilroy noted that Prime introduced a 50 series system, the 5370, earlier this year to fill in its traditional proprietary line.

### True to 50 series users

Richard Snyder, president of Prime's Computer Systems Business Unit, reiterated Prime's commitment to existing 50 series customers and confirmed that the company will focus on providing more software products for customers.

With an admittedly shrinking customer base during the past few years, Prime has taken steps to preserve the loyalty of remaining users. The company has reconfigured its Pick-like database product, Information, to run in a Unix environment and will be offering the software on IBM RISC System/6000 and Digital Equipment Corp. VAX platforms as well.

For now, some 50 series users are still on the fence. Skyway Freight Systems, Inc., a longtime Prime 50 series shop in Watsonville, Calif., is currently evaluating the Prime Unix offerings, but no decision has yet been made.

Skyway is still discussing options and meeting with different vendors, said John Stroud, systems operations administrator. "We are trying to do this in one fell swoop — move the entire company from System A to System B," Stroud said. "We have to move carefully, as we cannot afford to make the wrong decision."

Paul Meallo, MIS director at Wearguard, Inc. in Norwell, Mass., another longtime Prime 50 series customer, said his company recently took delivery of two Unix-based Sequent Computer Systems, Inc. computers. The systems will be used to develop a marketing database for Wearguard.

Wearguard still has two 50 series models from Prime and two of the older 9955 models, all running distribution applications. Meallo said these are Pick-based applications that will eventually be migrated to the Sequent boxes.

"Frankly," Meallo said, "we weren't convinced that Prime had the expertise to service and back the Unix products."

Facing stiff competition in the Unix marketplace, Prime hopes to add value through imaging and connectivity software packages.

Snyder also said Prime hopes to increase its presence in the value-added reseller (VAR) market in the U.S. The VAR channels currently account for 35% of Prime's U.S. business.

"We expect EXL series sales to make up for the 50 series decline," Snyder said.

Revenue for the 50 series was down 21.9% in 1990. The Mips Computer Systems, Inc.-based EXL 7000 Unix computer systems started shipping in the third quarter of 1990.

### Prime scores in Australia

Prime shipped 75 EXL boxes to customers in the fourth quarter, and the company's Australian subsidiary recently landed a contract worth $6.4 million from the Queensland State Government for 33 EXL 7000s.

Even so, the Unix-based system has a lower margin, and Prime will have to show higher volumes than currently reported, analysts said.

George Weiss, vice president at Gartner Group, Inc. in Stamford, Conn., said the only way proprietary systems vendors moving to Unix can survive is to "generate 200% to 300% growth rates in Unix system sales to offset a proprietary installed base, which is likely to be eroding at a rate of 15% to 20% each year."

**Prime numbers**

*The Unix-based EXL series now accounts for about 10% of Prime Computer, Inc.'s installed base*

**1990 worldwide installed base by size class**

| | |
|---|---|
| Proprietary small-scale systems (two to 16 users; average value: $10,000 to $100,000)* | 12,285 |
| Proprietary medium-scale systems (17 to 128 users; average value: $100,000 to $1 million)* | 7,622 |
| EXL systems | 2,322 |

*International Data Corp. (IDC) definitions

Source: IDC — CW Chart: Doreen St. John

# Hospital's new delivery: Integrated applications

ON SITE

BY MARYFRAN JOHNSON
CW STAFF

WORCESTER, Mass. — An aging IBM 4381 mainframe will host a newborn software environment for St. Vincent's Hospital and The Fallon Clinic as the organizations sweep out long-entrenched homegrown systems and simultaneously install integrated financial, materials management, human resources and payroll applications.

"This will give us more timely turnaround of information and more ready accessibility for key user groups," said William Florio, vice president of information systems at St. Vincent's.

"We'll be moving to on-line from a totally batch-oriented system, and that will allow us to put the information we need at our fingertips," he explained.

"Overall, this allows us to manage the use of financial data much more effectively and efficiently," he added.

Global Software, Inc. is providing a full set of financial applications, hospital materials management and an executive information system for the senior executives/physicians, while Genesys Software Systems, Inc. is supplying new payroll and human resources systems.

The joint installation will take place during the next 18 months, saving the hospital an estimated $250,000 annually. Yet patients of the hospital and clinic are unlikely to notice much change, Florio said. "In the materials management department, however, better inventory control may impact patient care with better distribution of supplies," he added.

**St. Vincent's Florio** *expects more timely information*

Last summer, St. Vincent's was merged into the Fallon Community Health Plan. Eventually, the growth of the merged hospital and clinic operations will require the applications to be moved from the 4381 to a larger system, probably a low-end Enterprise System/9000, Florio said.

"The hospital was quite far along in studying the [conversion] to Global and Genesys, so we came into the game kind of late," said Roland Beaulac, chief information officer at the Fallon Clinic. The merger has been a harmonious one from the beginning, however, and the clinic's executives readily agreed with the hospital's choice, he said.

The merger brought a "whole potpourri of medical enterprises legally under one roof," Beaulac said.

That potpourri includes the Fallon Clinic with its 33 locations and seven pharmacies here, the Fallon Community Health Plan with 130,000 subscribers and St. Vincent's 550 licensed hospital beds plus another 500 Providence House nursing home beds in the Boston area.

"We did a little homework ourselves, and it was difficult to find an unhappy customer of either vendor," Beaulac said. "From a corporate standpoint, moving to the Global and Genesys systems will be advantageous because we'll all be counting the same unit the same way."

The applications will be available to users over Novell, Inc. local-area networks at both the hospital and the clinic, linked via an IBM Token Ring network with Personal System/2 servers. The clinic LAN will communicate through an IBM 3090 there to the 4381 at the hospital, Beaulac said.

Beyond the installation of new application software, the hospital and clinic are also studying a number of options that will move the organization beyond its current two-tier computing environment of mainframes and personal computers or terminals.

"In the near future, we certainly are going to see some [IBM] RISC System/6000-type technology or perhaps some Application System/400 technology, to handle our enormous amounts of data once we get into imaging," Beaulac said. "We can only store so much paper, so imaging is something that has to be done. It's a survival issue more than something optional."

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# Users analyze D&B strategy

BY SALLY CUSACK
CW STAFF

BOSTON — Dun & Bradstreet Software customers, having survived the initial difficulties caused by its genesis in McCormack & Dodge's merger with Management Science America, Inc., appeared ready to concentrate on learning more about the vendor's recently announced client/server strategy as they gathered here last week for the annual user group meeting.

Components of the mouse-and-menu-driven technology were demonstrated at the show. The prototype was developed on a Microsoft Corp. DOS-based Windows environment, using an Intel Corp. 80386-based platform.

User reaction to the technology was positive, but actual implementation will vary depending on individual needs.

Susan Johnson, senior information analyst at Gencorp Aerojet, a government contractor based in Sacramento, Calif., viewed the client/server prototype favorably. Gencorp is standardizing several in-house packages on an IBM 4300-class machine with D&B packages.

"We have lots of users who need to access the General Ledger but won't touch a keyboard. This type of graphical user interface would be less intimidating to them," Johnson said.

Tom Gallant, systems specialist at Disney Worldwide Services, Inc., withheld judgment pending a more detailed evaluation. For client/server to be useful at Disney, accessing mainframe data would "have to be easy," Gallant said.

The Burbank, Calif.-based company supports all financial applications for the Disney divisions and uses most of the M-Series product offerings in an IBM 3090-400S environment.

"We hope to achieve client/server in the next two or three years," said Ellen J. Palumbo, assistant vice president at Scudder, Stevens & Clark, Inc., an IBM 3090-class mainframe shop in New York.

### Positive response

An independent opinion research firm surveyed attendee reaction to the client/server model. Sixty percent of the respondents believe client/server will benefit their organization within two years.

When asked what would most likely cause delay in adopting client/server, 34.3% cited implementation costs and 26.4% said it would be selling top management on the need. Once implemented, 40% stated, the greatest benefit derived from client/server will be information access. Approximately 300 of the more than 1,400 attendees responded to the survey.

The client/server product will be offered in a modular, time-phased delivery to allow incremental customer migration. The first products are scheduled for delivery by year's end, although D&B did not disclose which modules would be first.

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LEVEL 5

# Macs, AIX work together

*A rare connectivity achieved between the two environments*

BY ELLIS BOOKER
CW STAFF

PEORIA, Ill. — Macintoshes to AIX and back again.

Many users desire connectivity between their Apple Computer, Inc. Macintoshes and their IBM RISC System/6000 Unix servers. Multi-Ad Services, Inc. is one of the few places that has it.

Multi-Ad, a leading supplier of electronic "clip art," now has a connection between 150 Macintoshes and an IBM RS/6000 Model 530 running AIX, IBM's Unix implementation.

One year from now, the company is slated to deploy a second RS/6000 to run the firm's business and financial applications.

"We're a Mac shop — our illustrators and most of our clerical people use them — and we wanted a way to utilize the Mac and still take advantage of a nonproprietary environment," said Jan Thomas, manager of information systems.

Finding a Mac-RS/6000 composite proved difficult, however. "This is not something you can call someone up on the phone about . . . not many people have done this," Thomas said.

Further complicating the issue, she said, was the fact that IBM and Apple "refused to acknowledge each other's existence" when the company began investigating the Mac-RS/6000 architecture last January.

### Establishing a common interface

The Macintoshes are connected to the server over a 10M bit/sec. Ethernet backbone network with Fastpath gateways from Shiva Corp. in Cambridge, Mass. To get a common interface between the IBM server and the Macintoshes, two X Window Systems implementations are used. This environment is now up and running at Multi-Ad.

A software front end called Clearaccess from Fairfield Software, Inc. in Fairfield, Iowa, allows the Apple desktop look and feel as a front end into an Oracle Corp. database running on the RS/6000. The Oracle database holds about 12G bytes of on-line graphic art.

For other employees with Macintoshes who will need to input information into the server, Multi-Ad will use the Versaterm terminal emulation package from Synergy Software in Reading, Pa.

The move to an RS/6000 and Unix will also mean a move away from homegrown software.

Making that migration easier will be an extensive documentation of Multi-Ad's existing software code. Excelerator, a high-level, personal computer-based computer-aided software engineering tool from Intersolv, Inc., was used to document the existing applications, built-in Cobol and other programming languages. "We also interviewed all the users of the system and added annotations with Excelerator," Thomas said.

The thorough documentation of the in-house-developed applications also made comparison shopping for commercial packages much easier, she said.

Now that the architecture is working, "adding more nodes is almost anticlimactic," said Thomas, who is nevertheless grateful the process is over.

**X marks the spot** — MULTI-AD SERVICES, INC.

- The key to connectivity at Multi-Ad is the X Window System environment, running on both its IBM RISC System/6000 Unix server and its Apple Computer, Inc. Macintosh computers.
- Currently, the Peoria, Ill.-based "clip art" supplier boasts 150 Macintoshes connected to the server over an Ethernet LAN.
- A year from now, Multi-Ad will roll in a second RS/6000, displacing the NCR Corp. mainframe that now handles all of the company's back-office applications.

CW Chart: Doreen St. John

# NCR enhances 6091 storage line

BY KIM S. NASH
CW STAFF

WICHITA, Kan. — NCR Corp.'s Peripheral Products Division recently added two new devices, including a stackable disk drive, to its 6091 line of storage products.

The new 6091 1.2G-byte disk subsystem connects to NCR workstations and servers. The shoebox-size subsystem is currently shipping and is priced at $10,680. Users can stack several 6091 subsystems alongside or atop desks in cabinets with interlocking grooves.

The 6091 SCSI Translator interprets and reconfigures single-ended small computer systems interface (SCSI) signals to differential signals, and vice versa. The $1,500 translator, which is available now, lets older differential disk and tape drive peripherals communicate with systems or peripherals that use a single-ended SCSI.

The 6091 products allow users to install new workstations, servers or midrange computers but keep the same peripherals, said Tom Mays, senior vice president of NCR's General Purpose Products Group.

The new products give NCR users some capabilities already available to users of other vendors' systems. "There is nothing unusual in this announcement," said Jim Porter, president of Disk/Trend, Inc. in Los Altos, Calif. Many computer makers now ship detachable 1.2G-byte hard drives for their workstations and midrange machines, Porter said. The 6091 SCSI Translator is no surprise either, he noted, because NCR "has been very active in the SCSI area."

# Cincom sees 'rightsizing' as the right stuff for strategy

BY ROSEMARY HAMILTON
CW STAFF

At its annual user conference late last month, Cincom Systems, Inc. adopted the new industry buzzword of "rightsizing" as a key strategy for its product line.

In essence, this is a continuation of the company's plan to move beyond IBM mainframes to Digital Equipment Corp. and Unix platforms. The goal is to provide versions of its key products for various platforms so users can adjust their hardware plans over time but continue to use the same software.

"This is very important," said William Davidson, supervisor of data administration and technology at Heinz U.S.A., a division of H. J. Heinz Co. in Pittsburgh.

Davidson said the company, which is running IBM mainframes in the data center, is currently evaluating system options for the factory to replace the discontinued IBM 8100 series.

"We are looking at the alternatives with [DEC] VAXs and [IBM] 9370s, and obviously, porting software is an issue," he said.

Working toward this rightsizing goal, company executives offered the following updates and product release schedules:

• Several product updates were announced for the Manage:Series. M/Server was introduced to allow users to create a client/server structure for text processing. It is scheduled for shipment in the first quarter of 1992.

A new release, M/Text, which is the text and word processing component, will begin shipping this month. Beta-test versions of M/Text for both VAX and Unix platforms are currently under way.

• Version 5 of Mantis, its fourth-generation language, is currently available. The company is hoping to begin beta tests for a DEC Ultrix version of Mantis in the third quarter and is currently looking for RISC System/6000 beta-test sites.

• AD/Sherlock, a software re-engineering management tool, was announced as part of the AD/Advantage applications development series. It is intended to provide change management and version management for software development. It can also be used to scan existing applications and then load information about those applications into a repository. The tool is scheduled for release in July.

# Synon tools fix IBM package

BY MARYFRAN JOHNSON
CW STAFF

LARKSPUR, Calif. — As IBM begins the task of re-engineering its manufacturing package — MAPICS (Manufacturing Accounting and Production Information Control System) — the tools it will use to rewrite modules for the Application System/400 platform will not be its own.

IBM recently announced that Synon Corp. will provide the AS/400 computer-aided software engineering (CASE) tools for the planned rewrite.

The ability to tie MAPICS into computer-integrated manufacturing applications and expanded customization capabilities are key benefits users should see once the modules become available later this year and next, said Jim Smith, director of business development at Synon.

"This sends a signal to the marketplace that IBM itself is using its AD/Cycle application development products from business partners, not just internal IBM products like its own CSP [Cross System Product]," Smith said.

The Synon CASE tools will be used to generate both RPG and Cobol code for the new MAPICS modules, allowing customers to upgrade and then write ancillary applications that hook into the new MAPICS applications, Smith explained.

# Unify adds interface support to Accell/SQL

BY JEAN S. BOZMAN
CW STAFF

SACRAMENTO, Calif. — Unify Corp.'s latest version of its Accell/SQL tool set is being promoted by the Unix-only software tools vendor as Unify's first step into the client/server arena.

However, Release 1.3.3, announced last month, has yet to be reviewed by many Unify users, and analysts are unconvinced that its enhancements lend major new functional improvements.

"Accell/SQL 1.3.3 has a large number of bells and whistles on it, but it does not appear that very much of the core technology has been changed," said Tom Moore, a senior consultant at International Data Corp. in Framingham, Mass. "It is supposed to have much better performance than previous versions and better support for graphical user interfaces."

Support for more GUIs, such as the Open Software Foundation's OSF/Motif and Microsoft Corp.'s Windows 3.0, are included for the first time. Sun Microsystems, Inc.'s Open Look was supported in an earlier release.

To support its client/server strategy, Unify has moved closer to client/server market leaders Sybase, Inc. and Sun, said Unify co-founder William Osberg, now director of product marketing.

Among the enhancements are better performance on the database server and better support for user interfaces on the client machine, Osberg said. "We've improved the performance of some Unify applications as much as three times by making better use of system memory," he said. "We work together with Sun's Open Look Toolkit to change the way memory is allocated, for example."

Accell/SQL is priced from $4,250 for a single-user Unix workstation to $55,460 for a large Unix computer.

# SI curbs costs with release of new architecture

MILPITAS, Calif. — System Industries, Inc. (SI) recently introduced a shared storage architecture that company officials said provides a less expensive alternative to Digital Equipment Corp.'s midrange and low-end storage products.

Employing interface technology licensed from DEC, SI's Comprehensive Storage Systems Interconnect (CSSI) architecture enables users to support up to four CPUs and to combine DEC Q-bus and VAXBI CPUs.

This provides users with a broader range of data storage devices than DEC's Digital Storage System Interconnect disks or Hierarchical Storage Controller environments, according to SI.

The new multihost disk controller, the CSSI-Clustor/M, is priced at $145,425 for a 12G-byte configuration.

Also introduced were disk and tape controllers, the SB2000 and SQ2000. They are single-board small computer systems interface controllers available with several disk and tape drives from SI. A dual-host SB2000/SQ2000 subsystem with 4G bytes of disk is priced at $37,900.

MARYFRAN JOHNSON

# Sun spinoff offers tool kit

MOUNTAIN VIEW, Calif. — Sunsoft Inc., a subsidiary of Sun Microsystems, Inc., recently announced its first product, called Tooltalk.

Tooltalk allows interapplication communications on a heterogeneous network. True to Sunsoft's mission — which is to offer Sun software on other reduced instruction set computing platforms on the Unix operating system — the product will boot on workstations from Hewlett-Packard Co., Digital Equipment Corp. and other companies, according to Steve Martino, director of application framework marketing at Sun.

The product, which sits above the system level, permits applications to exchange control information. "It allows applications to rendezvous. If they want to share files, they need to use another system like NFS [Network File System]," said Steve MacKay, director of user environment software at Sunsoft.

The product was ready ahead of Sunsoft's official opening, MacKay said: Sunsoft is still moving into its building on Sun's campus. Tooltalk is currently available to developers and will be generally available by year's end, he said.

J. A. SAVAGE

## NEW PRODUCTS — SOFTWARE

### Development tools

Cyberscience Corp. has ported Cyberquery/Cyberscreen (CQCS), its fourth-generation language and report writer package, for Mips Computer Systems, Inc.'s R3000 platforms.

CQCS includes a graphics presentation module, integrated mail-merge capability and a transaction processor. It is database-independent, the company said.

The product costs $22,000 for the full development environment with unlimited users.

**Cyberscience**
**Suite 800**
**10065 E. Harvard Ave.**
**Denver, Colo. 80231**
**(303) 745-3900**

### Applications packages

GEC-Marconi Software Systems, Inc. has announced availability of Size Plus, a software project size estimator using function point analysis techniques.

Size Plus, which is available for the Unix and VMS operating systems, supports five function point analysis methods of estimating the size of data processing and real-time applications. It works with multiple-language projects and includes a report generator. The product features a graphical user interface based on the X Window System and the Open Software Foundation's OSF/Motif.

A single-user license is priced at $2,800; an unlimited-user license costs $7,300.

**GEC-Marconi Software Systems**
**Suite 450**
**12110 Sunset Hills Road**
**Reston, Va. 22090**
**(703) 648-1551**

The Dylakor Division of Sterling Software, Inc. has updated its DYL-280 information management product line for IBM mainframe systems.

The DYL-280 information manager and DYL-280 II report writer include an installation macro facility for easy customization, IBM DB2 catalog support and a move command for handling arithmetic fields via three new keywords.

Pricing for DYL-280 Release 6.0 ranges from $13,000 to $45,000, depending on the processor group. DYL-280 II costs from $17,000 to $57,000.

**Sterling Software**
**Dylakor Division**
**9340 Owensmouth Ave.**
**Chatsworth, Calif. 91313**
**(818) 718-8877**

Precision Visuals, Inc. has extended its Pv-Wave data visualization product line for the Digital Equipment Corp. workstation line, introducing an Open Software Foundation Motif-based version of the Pv-Wave Point & Click interface. The Motif version costs $4,500 for a single-user license.

The company has also announced Pv-Wave:Nag, a product combining visualization and statistical analysis facilities. The product runs under the VMS and DEC Ultrix operating systems. Pricing starts at $1,295.

**Precision Visuals**
**6260 Lookout Road**
**Boulder, Colo. 80301**
**(303) 530-9000**

Intelligent Light, Inc. has released Fieldview, a three-dimensional visualization package for fluid dynamics applications.

The product, which runs on IBM, Sun Microsystems, Inc. and Silicon Graphics, Inc. workstations, computes vector and scalar functions and displays results in several different visualization techniques. According to the vendor, it is the first application-specific visualization software package.

Fieldview costs $5,000 for a single license.

**Intelligent Light**
**17-01 Pollitt Drive**
**Fair Lawn, N.J. 07410**
**(201) 794-7550**

### Computer-aided software engineering

Michaels, Ross & Cole Ltd. has added Smartlinks, an applications integration software package, to its line of computer-aided software engineering (CASE) tools for the IBM Application System/400 environment.

The product links reusable code modules generated by the company's MRC-Productivity series CASE tools. On-line data queries, graphs and maintenance utilities can be integrated in complex applications with a common windowing interface. Smartlinks forms links automatically without requiring additional user-written code.

The MRC-Productivity Series costs from $5,000 to approximately $50,000, depending on AS/400 model. The series includes relational database management functionality.

**Michaels, Ross & Cole**
**Suite 203**
**450 E. 22nd St.**
**Lombard, Ill. 60148**
**(708) 916-0662**

### Utilities

Diversified Software Systems, Inc. has upgraded Job/Scan, its job control language (JCL) management software package.

Job/Scan Release 5.5 adds support for IBM's System Managed Storage (SMS) environment, validating SMS keywords in JCL syntax. Job/Scan also supports IBM's System Product 4.1 enhancements to the MVS/ESA operating system and includes a new JCL Change Facility.

Perpetual license fees range in price from $7,500 to $20,000, depending on processor size.

**Diversified Software Systems**
**18630 Sutter Blvd.**
**Morgan Hill, Calif. 95037**
**(408) 778-9914**

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## HARDWARE

### Processors

Alpha Microsystems, Inc. has announced two multiuser systems based on the Motorola, Inc. 50-MHz MC6830 processor.

The AM-3000M entry-level configuration includes 4M bytes of random-access memory, a 200M-byte hard disk and eight serial I/O ports. A full range of storage options are available. The AM-3000M runs the Alpha Micro Operating System (AMOS) and can optionally execute DOS-based applications as well. The base system costs $17,355.

The AM-3000 VME costs $18,980 in a similar configuration and includes 6-, 10- and 21-slot VME bus models.

**Alpha Microsystems**
**3501 Sunflower Ave.**
**Santa Ana, Calif. 92704**
**(714) 957-8500**

Logicraft, Inc. has announced availability of Omni-Ware, a software and hardware server solution for the Hewlett-Packard Co. Apollo 9000 Series 400 workstations running the HP-UX operating system.

Omni-Ware gives workstation users access to personal computer software under multiple operating systems: DOS, OS/2, The Santa Cruz Operation's SCO Unix and Microsoft Corp.'s Windows 3.0. The standard Omni-Ware configuration includes an Intel Corp. processor, a 5¼-in. floppy drive, Ethernet connectors and 1M byte of random-access memory.

Pricing for the product starts at $2,495.

**Logicraft**
**22 Cotton Road**
**Nashua, N.H. 03063**
**(603) 880-0300**

Silicon Graphics, Inc. has expanded its Personal Iris workstation line with the 4D/30 model.

The system is based on the 30-MHz Mips Computer Systems, Inc. R3000A reduced instruction set computing processor and costs $13,000. Turbo graphics performance is available on the 4D/30TG model, priced at $23,000.

The company also recently announced Skywriter, a visual system for real-time simulation. Skywriter is based on the R3000 chip and performs more than 140 million instructions per second in real-time video graphics simulations, according to Silicon Graphics. Skywriter is compatible with the Personal Iris line.

Entry-level pricing is $209,900.

**Silicon Graphics**
**2011 N. Shoreline Blvd.**
**Mountain View, Calif. 94039**
**(415) 960-1980**

### Power supplies

Decision Data, Inc. has designed a field-upgradable uninterruptible power supply system called the 5930.

The 5930 offers 95% efficiency with power ratings ranging from 8kVA to 18kVA. It supports up to four IBM Application System/400 computers. Users can upgrade the unit on-site as power requirements increase, the company said.

The 8kVA model starts at $10,500.

The company has also announced workstations based on the Intel Corp. 80286 and 80386 chips and Level 1 technical support for AS/400 users.

**Decision Data**
**One Progress Ave.**
**Horsham, Pa. 19044**
**(215) 674-3300**

PC & WORKSTATION SHORTS

## Apple tool gets Posix approval

**Apple Computer, Inc.** said Macintosh computers running A/UX, Apple's version of the Unix operating system, are the first personal computers certified by the U.S. National Institute of Standards and Technology as fully Posix-compliant. Posix is the IEEE standard used to promote portability in applications utilized by government agencies.

**Sears Business Centers** will sell, service and support PCs from Cleveland-based **Cumulus Corp.** Two different 16-MHz Intel Corp.-based 80386SX machines and a 25-MHz 80386DX model are available immediately from Sears, according to Cumulus.

**Intergraph Corp.** said its Japanese division will port Microstation PC 4.0, a computer-aided design (CAD) package, to **NEC Corp.** PCs. Intergraph Japan signed an agreement with Softbank, the country's largest PC software distributor, to market the CAD package in Japan, beginning late this year.

# Insurer stands behind OS/2

*Despite Windows popularity, Mutual of Omaha expands OS/2 use*

ON SITE

BY ELLIS BOOKER
CW STAFF

OMAHA — While some users have shied away from OS/2 in the face of the ground swell of developer support for Microsoft Corp.'s Windows 3.0, Mutual of Omaha Insurance Co. is pointing to the benefits that have flowed from its OS/2 commitment.

The insurer already has one 400- to 500-workstation OS/2 network in place and another OS/2 project in the works that will support close to 400 users.

The existing OS/2 application uses personal computers to front end, under 3270 emulation, health claim-processing applications on the company's IBM 3090 mainframe, running MVS/ESA. This application — along with an 800-station DOS network built before OS/2 was a viable alternative — was originally designed for dumb terminals.

**Nothing dumb about it**

However, the OS/2 application that is being built "assumes the presence of a PC client" and will not be able to work with dumb terminals, according to Jon Saunders, vice president and director of the support services division of the computer data services operation.

This application will feature true, cooperative processing between the company's mainframe and the desktop computers. It will be used to enter and issue new health and life insurance claims.

OS/2 has already shown its ability to handle large files and multitask printer jobs on the servers better than DOS, Saunders reported.

"In fact, we've justified LAN servers with OS/2," he said, noting that on some local-area networks he has been able to

*Continued on page 38*

# Pen Pal tool simplifies pen-based applications

BY JAMES DALY
CW STAFF

LOS ALTOS, Calif. — Pen-based computing may be a snap for the user, but building an application that comprehends the average chicken scratch can be an awfully knotty programming proposition. The result: A lack of high-level in-house programmers has nearly erased the ability of small and medium-size firms to craft customized pen-based applications.

One of those hurdles was removed last week when Pen Pal Associates, Inc. introduced Gridpen-pal, a development tool kit for Grid Systems Corp.'s Gridpad personal computer. Gridpen-pal replaces the typical complex C programming techniques used for most pen-based application building with a simplified programming process similar to the type used when building macros for Lotus Development Corp.'s 1-2-3, according to Pen Pal President Samuel Wiegand.

"C can be an awfully demanding language, and we're saying you don't need to be a wizard to enjoy pen-based computing," Wiegand said. "Gridpen-pal is specifically designed for those who have an understanding of programming but are not professional programmers."

Wiegand added that Pen Pal will extend the Gridpen-pal to other pen-based platforms in the long term, but for the foreseeable future, the firm is concentrating on the Gridpad, which is considered the most successful pen-based computer on the market.

Gridpen-pal is an icon-based environment that is part compiler and part runtime engine. Users are provided with a template. They then work their way through a number of successive programming options, building custom applications as they go and avoiding the cryptic syntax of C, Wiegand said.

The rollout could signal a radical widening of the embryonic pen-based computing market. Analysts said such machines could flourish in the next few years because they can scoop up the millions of workers who cannot use a conventional keyboard-based portable computer, including meter readers, delivery truck drivers, insurance claims adjusters and police officers. Research firm Computer Intelligence/Infocorp estimates that annual sales of pen-based computers will grow to 3.4 million units by 1995.

One point slowing their growth, however, is the programming required to build customized in-house applications. Most development tool kits require knowledge of complicated C programming techniques as well as knowledge of building a graphical user interface and some object-oriented programming abilities. There is also a shortage of C programmers, and many companies do not have the budgetary flexibility to hire third-party programmers.

The Gridpen-pal tool kit is priced at $1,650 with the runtime control program priced at $425. Both are scheduled to ship next month.

In related news, NCR Corp. added to the ranks of pen-based computers last week with the introduction of a 9- by 12-in. model powered by an Intel Corp. 80386 microprocessor. Available next month, it will sell for approximately $4,800.


# COBOL for Windows™ . . . *Get the Picture?*

The newly-released Micro Focus COBOL/2™ Version 2.5 now allows developers to write fully-functional Windows 3.0 applications with the standard WIndows API and the standard Windows development kit from Microsoft®. With Micro Focus COBOL/2 Version 2.5, existing character-based applications can be migrated immediately to the Windows 3.0 environment where they will utilize the Windows memory-management and windowing capabilities.

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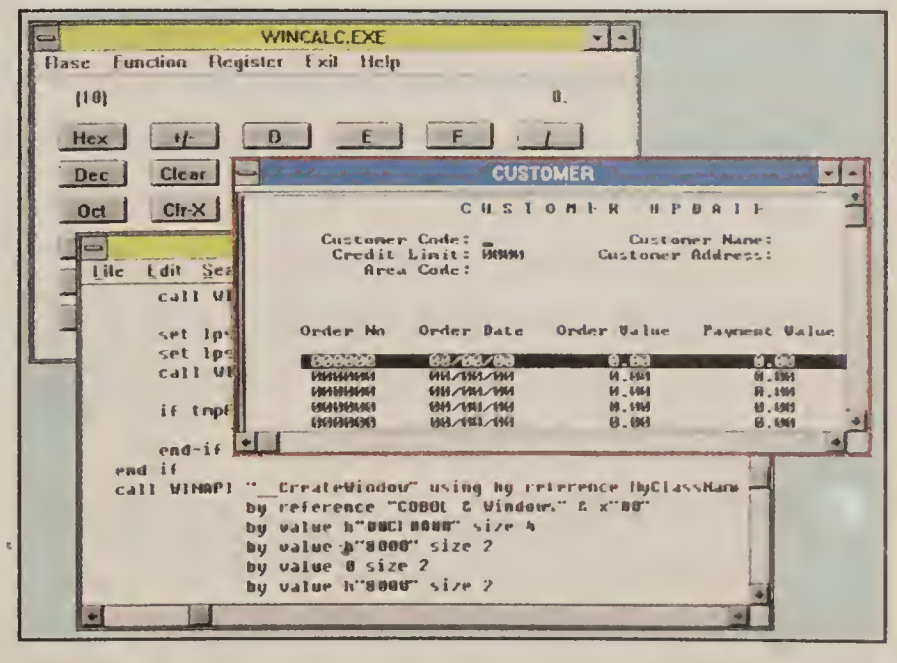
Windows support is just one of the enhancements Micro Focus is offering COBOL developers in its 1991 product line. ***Call 800-872-6265 to learn more about the latest version of this comprehensive COBOL programming environment.***

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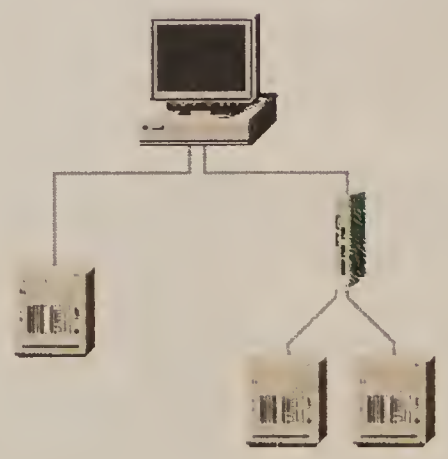

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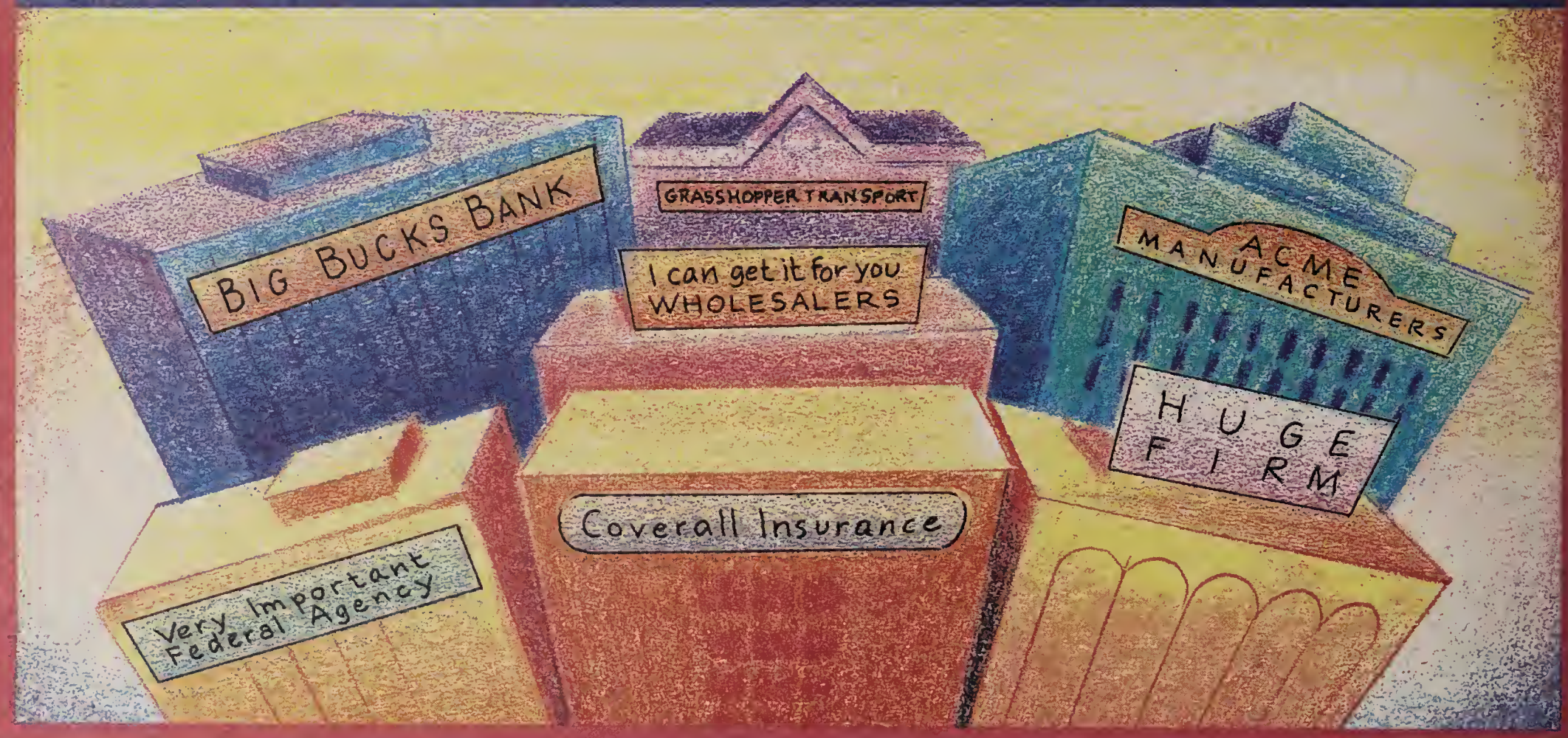


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# Multimedia eases testimony

ON SITE

BY CAROL HILDEBRAND
CW STAFF

SAN ANTONIO — Child abuse is one of humanity's most shameful crimes, and one of its most troubling aspects is the difficulty prosecutors have in obtaining convictions: Assailants often go free because victims are too traumatized to sit in the witness box and face the defendant. The Bexar County District Attorney's office here has turned to technology to help children cope with facing their attackers.

The Family Violence Unit of the district attorney's office uses Multimedia Information Network Exchange (Minx), a visual communications system from Datapoint Corp., to overcome this problem.

Minx incorporates full-motion and full-color video and voice and data transmission capabilities into a desktop workstation. The monitor looks like a television to children, which helps them feel more comfortable with the process. "What's unique is that children who are terrified in court have absolutely no fear of talking to the TV," said Robert Hogue, a criminal investigator for the Family Violence Unit who works extensively with the Minx system.

The Bexar County application uses two workstations, one in the courtroom and one in the "Teddy Bear Room," a small, cheerful playroom where the child sits during testimony. The workstations are linked via television cable and a cluster server. As many as eight workstations can be added to the system.

Monitors are provided for the judge, jury, prosecution and defense. The child, seated in the playroom, can testify without the threatening physical presence of the defendant.

Through the voice-activated system, the witness can see and hear what is going on in the court while the people in the court have access to the witness. The entire process is videotaped in each direction to ensure accurate records for the appellate process. Hogue said there were originally concerns that identification of the attacker might have been a problem, but "the picture definition has been very clear and good."

### Special cases

"We don't bring this stuff out for every case," said Barbara Hervey, an appeals attorney in the appellate section of the district attorney's office, adding that it is used only when absolutely necessary. Still, in the five times the system has seen action, five convictions have resulted. And there have been instances of guilty pleas simply because the defendant and attorney were aware of the availability of the technology, according to Hogue.

The fact that Minx is a two-way interactive system is key to full-fledged acceptance in courts: Remote testimony generally runs afoul of a defendant's right to confrontation as guaranteed by the Sixth Amendment. Backers are betting that its interactivity will satisfy that right.

The Minx system is used under a Texas statute allowing for the use of closed-circuit television in child abuse cases. Use of the system has resulted in appeals on the right to confrontation grounds, but Hervey said she is hopeful that Minx will gain full acceptance.

Hervey said she expects that the first two cases under appeal will be lost on technical grounds that do not pertain to the actual legal right to use the Minx system. However, she said, "I expect that by the third case we will win."

The Minx system does raise questions, but Hervey said she thinks that it's worth it: "We have still done something for the kids."

**Protecting the innocents**
*A multimedia system is helping children testify in abuse cases*

**The challenge**
The Family Violence Unit of the Bexar County District Attorney's office wanted to ensure that victims of child molestation would not have to face their attackers without violating the defendant's right to confrontation.

**Solution**
Minx multimedia system from Datapoint Corp.

**Results**
The Minx system has a 100% conviction rate in cases used thus far.

CW Chart: Doreen St. John

# Rewritable drive technology gets boost from Sony, IBM

BY CHRISTOPHER LINDQUIST
CW STAFF

Rewritable optical disc technology received a couple of shots in the arm recently with announcements from Sony Corp. of America and IBM.

Sony unveiled the SMOD-301 3½-in. rewritable optical disc drive. The drive has an average seek time of 40 msec — reportedly the fastest in the industry for rewritable drives — and a data transfer rate of 625K byte/sec., according to the company. The drive is slated to ship this summer and will cost less than $1,000 each in large quantities.

A Sony spokesman said the company is aiming for an end-user cost of less than $2,000 per drive. Cartridges for the drive will reportedly have a suggested retail price of $64.

Meanwhile, IBM said a 3½-in. rewritable optical drive would be available as an option on several models in the Personal System/2 line. The $1,795 drive reportedly has an average seek time of 66 msec. Rewritable optical cartridges for it cost $70.

Linda Helgerson, president of Helgerson Associates and editor of "CD-ROM End User" newsletter, said IBM's entrance into the 3½-in. rewritable market is a "validation" of the medium. "IBM has acknowledged it, and you know they don't do anything until they've done considerable market research," she said.

Both drives claim formatted capacities of 128M bytes. They will also be able to use optical read-only memory discs, which have a formatted capacity of 123M bytes and could be used for distribution of data-intensive products such as images and large databases.

# Utility vendors unshaken by DOS 5.0

BY JIM NASH
CW STAFF

Microsoft Corp.'s inclusion of key utility features in DOS 5.0 has done little to shake user confidence in third-party DOS utilities. In fact, some industry observers predict that Microsoft's decision will bring the other vendors more business.

Until last month, when Microsoft introduced DOS 5.0, utility makers such as Central Point Software, Inc. and Symantec Corp. had shared a symbiotic relationship with the software leviathan. They provided systems management functions absent from DOS.

In DOS 5.0, however, Microsoft has licensed three key features from Central Point: undelete, which reverses a file-delete command; mirroring, which is a low-level save function for root directories and file allocation tables; and unformat, which recovers files from an accidentally formatted hard disk.

"I'm sure [Microsoft] will continue to go down the priority list" of user needs, adding to its own features, said Michael Sheafe, a computer analyst working with American Express Co.'s strategic operations in New York. However, he said, Central Point, Symantec and others will continue to offer larger sets of utilities than DOS.

"I will not give up several tried-and-true utilities — including all of the disk utilities" found in Symantec's Norton Utilities, Sheafe said. One function singled out by Sheafe is Norton's ability to consolidate large files that have been segmented and stored on different parts of a hard disk.

For its part, Central Point is claiming that Microsoft's decision "creates a standard for data recovery," said Mike Brown, chief executive officer at the Beaverton, Ore.-based vendor. Without giving details, Brown said Central Point intends to add new utilities, without which PC Tools will fall into DOS' shadow.

Ripples coming from DOS' adoption of the utilities will be relatively minor. "All the [utilities vendors] are going to take some hit from DOS 5," said Earle Robinson, president of the New York consulting firm Softerware. Some users, especially those wanting to keep costs down, will opt for DOS 5.0 and ignore utility vendors, Robinson explained.

However, with 60 million DOS users worldwide, he said, "you can even be a niche player and make a fortune." DOS' adoption of the three utilities may even increase sales for Central Point and Symantec, one reseller said. The move may whet the appetites of users who had not known the capabilities of operating system management tools, said Scott Gardner, general manager of Affordable Computers, Inc., a value-added reseller in Dewitt, N.Y.

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CONTINUED FROM PAGE 31

replace two Personal System/2 Model 80s running DOS with a single PS/2 Model 80 running OS/2.

Indeed, Mutual of Omaha plans to migrate over time the servers supporting 1,100 DOS workstations — now spread among 40 LANs — to OS/2. Currently, about half of these servers run OS/2.

Even so, Saunders is hedging his bets, keeping pace with the Windows 3.0 environment with an experimental Windows 3.0 LAN in his data processing center. That LAN uses about 20 PCs connected to an OS/2 server running IBM's OS/2 LAN Server network manager.

**No future changes planned**

Mutual of Omaha's in-production OS/2 network uses IBM PS/2 Model 70s as the OS/2 clients and PS/2 Model 80s as OS/2 servers. Saunders said Mutual of Omaha is using Release 1.2 of both LAN Server and OS/2, but it will not trade up to Release 1.3 because it is "not worth the expense." It will await the 2.0 release, he said.

Although the insurer's OS/2 implementations are primarily dedicated to single applications, that is not to say Saunders does not think about the day when his users may ask him to mix OS/2 and DOS.

"But that may change," he said, "when we get casual [users on DOS machines] who need OS/2 services."

Saunders is specifically hoping IBM's next release of OS/2, the 32-bit Version 2.0, will address this need with a promised enhancement that will allow the multitasking of DOS and Windows applications under OS/2.

While satisfied with OS/2 technically, Saunders said IBM's technical support for the product is not on par with the national and local support he can get for the MVS operating system on his mainframe.

"There's not the same level of support . . . yet we are becoming as dependent on OS/2 as we are on MVS," he said.

Within the year that the OS/2 LAN has been in operation, there have been two major problems, both of which required a call to the national help desk, according to Saunders. Once IBM had to develop a corrective patch for Mutual of Omaha; the other problem, a minor fault, was solved with a corrective service disk.

Like other OS/2 users, Saunders said he is somewhat unhappy with the pace at which software developers have picked up the OS/2 mantle, but he expects improvement in this area, at least among his major software suppliers.

# Client/server gaps

Information systems executives who recently discussed client/server architectures generally advocated the use of OS/2 over DOS or Windows but also expressed some complaints about OS/2.

"Windows is not the answer for distributed transaction processing," said David Flaxman, vice president of information technology at Goldman Sachs & Co. in New York. Better alternatives were OS/2 or Unix, he said.

However, Michael Purcell, a software consultant for Deerfield, Ill.-based Baxter Healthcare Corp., said Baxter was moving to Windows because "we have to integrate office and productivity systems." Moreover, he said, OS/2 lacks the kind of performance monitor needed to manage a distributed environment, while Unix provides these tools but has a more complicated end-user interface.

Richard Price, vice president of information services at Peabody Holding Co. in St. Louis, summed up the panel's experience, saying that client/server architectures, while difficult to enact so far, are generally worth the effort.

# External SCSI drives announced

Micropolis Corp. in Chatsworth, Calif., recently announced a line of small computer systems interface (SCSI) external disk drives with formatted capacities that range from 340M bytes to 1.75G bytes. The Microdisk products are the first external drives available from Micropolis.

The Microdisk products can be used with either IBM Personal Computer compatibles or Apple Computer, Inc. Macintosh systems, Micropolis reported.

The drives are rated with a 150,000-hour mean time between failures and reportedly have an effective access time as low as 3.9 msec. The drives will all be Novell, Inc. Netware-ready, according to the company.

The company said 340M-, 670M-, 1.03G-, 1.34G- and 1.75G-byte models will be available. The drives are housed in metal enclosures, and they come complete with cables, disk-partitioning software and user-selectable SCSI addressing. SCSI host adapters are available as options.

The Microdisk drives come with a five-year warranty. Pricing ranges from $2,795 to $7,495, depending on model. They are scheduled to begin shipping this month.

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# PC service facilitates the rebuilding of Kuwait

BY RICHARD PASTORE
SPECIAL TO CW

U.S. firms hoping for a share of the rebuilding opportunities in Kuwait will find plenty of contracts if they can overcome the hurdles of a devastated infrastructure and virtually nonexistent direct communications. A volunteer group of U.S. businessmen in Saudi Arabia is trying to facilitate U.S./Kuwaiti contact with a personal computer-based bulletin board.

The IBM Personal Computer AT-based system, which began operating this month, allows U.S. businesses to dial into a bulletin board or voice message system to access reports of Kuwaiti contract offerings. They can also exchange information about their firms and products on the bulletin board or send faxes on the same telephone line.

Kuwait, which was ravaged by the invading Iraqi forces earlier this year, is only now reopening its first hotels and clearing main roads, according to the Saudi Arabia-based American Businessmen's Association (ABA).

The computer infrastructure is virtually nonexistent, as telephone service has not yet been restored to its former state. The little telephone traffic that exists there is being routed through offshore U.S. communications ships. Therefore, neighboring Saudi Arabia has become Kuwait's staging area.

"It's difficult to go directly to Kuwait to drum up business, and it's less than effective in many cases if you jump in without prior knowledge," said John Scarritt, a member of the ABA in Dhahran, Saudi Arabia, and the coordinator of the system. "That's the main reason we thought of doing this."

A switch determines whether incoming calls are fax, modem signal or voice and routes calls appropriately. Callers from North America will need a high-quality, error-checking modem operating at 9.6K bit/sec. to get through, Scarritt said, or they can access the latest prerecorded Kuwait information.

The U.S. consulate in Dhahran will update the system as information becomes available from the office of the U.S. consulate in Kuwait City.

An example of the general information being distributed is the fact that Kuwait intends to reopen its schools in September and needs school supplies. Through the bulletin board, U.S. school supply manufacturers can contact the Kuwaiti minister of education to do business.

The Washington, D.C.-based ABA is a volunteer organization and will charge no fees for the service, ABA President Ted Debec said. The organization's Washington, D.C.-based agent Intercom will handle inquiries at (202) 887-1887.

# Computervision revises CADDS

BY SALLY CUSACK
CW STAFF

BEDFORD, Mass. — Computervision, a Prime Computer, Inc. company, last week announced a major revision of its CADDS computer-aided design and manufacturing (CAD/CAM) software product.

The state-of-the-art aspects of Computervision's existing CAD/CAM offerings are combined in one product that far outdistances the competition in price and performance, said Charles M. Foundyller, president of Daratech, Inc., a CAD/CAM research firm in Cambridge, Mass.

Designated CADDS 5, the product runs on Scalable Processor Architecture (Sparc)-based workstations. The latest release allows engineers to capture design intent and quickly make changes to a CAD part of assembly.

The product offers an intelligent user interface capable of anticipating a user's work progress, the company said. As an engineer designs a part, the interface presents the menus, icons or design aids needed to perform the next operation.

CADDS 5 is targeted at the mechanical application market, a market in which Computervision holds the No. 2 position behind IBM on a worldwide basis, according to Daratech.

Additional features include parametric modeling, variational geometry, a sketcher, a constraint modeler, feature-based modeling and X Window access. The software can be customized by any user, and two standard interfaces are shipped with each product — one designed for power users and the other configured for occasional users.

The package is priced at $24,500. Through December 1991, the company will waive a $9,800 upgrade fee to CADDS 4X users running on Sparc-based workstations. Computervision will also waive the upgrade fee to users migrating from Motorola, Inc. and Computervision Design System hardware platforms to the Sparc environment. Shipment is slated for October.

# Ami Pro 1.2: Strong ease of use, graphics

## Lotus Development Corp.'s Ami Pro Version 1.2

| Reviews | Performance | Ease of use | Editing capability | Printer support | Network support | Documentation | Service and support | Value | Score |
|---|---|---|---|---|---|---|---|---|---|
| *Infoworld* 1/7/91 | Very good | Very good | Very good | Very good | Very good | Good | Very good | Excellent | 7.8* |
| *PC Week* 12/31/90 | Fast | Good | Satisfactory | Good | Satisfactory | Satisfactory | NC | Advanced features | Attractive choice |
| *PC World* 6/91 | Good | Excellent | Excellent | Excellent | NC | NC | NC | Excellent | Best buy |
| **Users** | | | | | | | | | |
| **Leonard Bayer,** Gordon S. Black Corp. | ■■ | ■■ | ■■ | ■■ | NC | ■■ | ■■ | ■■ | Feature-rich |
| **Stephen Thompson,** 1st National Bank of Chicago | ■■ | ■■ | ■■ | ■■ | NC | ■■ | ■■ | ■■ | Frame facility is useful |
| **Jim Sappington,** McDonald's Corp. | ■■ | ■■ | ■■ | ■■ | ■■ | ■■ | ■■ | ■■ | Distinguished by graphics |
| **Analysts** | | | | | | | | | |
| **Oliver Picher,** Datapro Research Group | ■■ | ■■ | ■■ | ■■ | ■■ | ■■ | ■■ | ■■ | Easy to use |
| **Scott Higgs,** National Software Testing Laboratories, Inc. | ■ | ■■ | ■■ | ■■ | NC | ■■ | NC | ■■ | Formatting made easy |
| **Jerry Caron,** Faulkner Microcomputer Reports | ■ | ■■ | ■■ | ■■ | ■■ | ■ | ■ | ■■ | Best Windows word processor |

Key: ■■ Very good ■■ Good ■ Fair ■ Poor

Reviewer evaluations are excerpts from articles. Refer to actual reviews for details. User and analyst ratings are based on telephone survey.
**Infoworld* score based on 1 to 10 ratings. NC: No comment

## Vendor financial ratings

| Analysts | Long-term stability | Short-term performance | Outlook |
|---|---|---|---|
| **Terence Quinn,** Kidder, Peabody & Co. | ■■ | ■ | Transition in product cycle |
| **Wendy Abramowitz,** Argus Research Corp. | ■ | ■ | Fair |

Lotus Development Corp. reported net income of $6.6 million in first-quarter 1991, compared with $22.8 million in first-quarter 1990. Revenue in first-quarter 1991 was $174 million compared with $165.5 million in 1990. Lotus purchased Ami Pro developer Samna Corp. for $65 million in late 1990.

*Technology Analysis — a roundup of expert opinions about new products. Summary written by New Products Writer Derek Slater.*

Lotus Development Corp. purchased Samna Corp., developer of Ami Pro 1.2, last year to give itself a fast start in the word processing market. The company picked a winner, reviewers said: Samna's Ami Pro, running under Microsoft Corp. Windows 3.0, earns blue ribbons in graphics facilities and ease of use. It also has editing features sufficient for all but the most complex chores.

**Performance:** Raw speed is an area in which the Windows environment can be a burden rather than a blessing. However, Ami Pro is reportedly only slightly slower than DOS-based applications.

A noteworthy quirk bogs the program down when two documents are opened for simultaneous editing: Ami Pro loads and runs a second copy of itself to handle the second document, a tortuous maneuver that wastes time and memory.

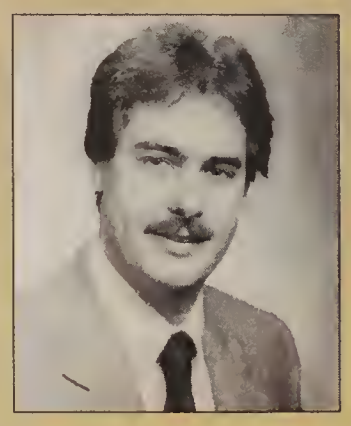
**Ease of use:** Reviewers unanimously crowned Ami Pro as the ease-of-use king among high-end word processors. Its flexible screen views, style sheets, quick windowing and customizable features — including an icon bar and macro language — all received positive mentions.

**Editing capability:** Ami Pro has strong fundamental editing facilities, including definable tabs, search-and-replace, a thesaurus and a spell checker. It is less than ideal, though, for handling longer documents because of its weak referencing tools (endnotes and footnotes) and because it does not automate the creation of long document forms. It also lacks a grammar checker and flat file database management.

Graphics and chart editing are two of the product's most formidable strengths. Numbers can be imported via the Windows Dynamic Data Exchange or typed in through a simple input window. The program generates bar, pie and other chart types.

*PC Magazine* likened Ami Pro to a desktop publishing program in its page layout method, which uses frames that can contain text or graphics and can either be tied to a location on the page or moved along with the associated text paragraph.

**Printer support:** The screen display faithfully mirrors paper output, and print drivers automate kerning and line spacing tasks. Users can experiment with output styles by windowing small text samples in various fonts.



"AMI PRO IS EASY TO use, and it places a strong emphasis on WYSIWYG formatting capabilities."

**Oliver Picher**
*Managing Analyst*
Datapro Research Group

**Network support:** Ami Pro allows read-only access to documents already being edited elsewhere on a network. It presents no compatibility problems with networking software and hardware, according to reviewers. One missing feature is redlining, which allows group evaluation of marked edits.

**Documentation:** *Infoworld* recorded two complaints about Lotus' documentation: The full manual covering Ami Pro's macro language is available only by special request, and users will have to refer to several different manuals to get a full understanding of the program's features. The on-line Help is reasonably strong.

**Service and support:** Support channels include telephone support until 7 p.m. Eastern time; on-line Help via Compuserve; automated fax support; special policies for corporate buyers; and a 90-day return policy. Reviewers said technical support is reasonably good.

**Value:** At $495, Ami Pro is an excellent value for Windows users. It is best suited for those who require extra graphics punch and are not concerned with a few missing high-level editing tools. Network node copies cost $199.

There is also a slimmed-down version of this product. That version, called Ami, cannot edit graphics and charts, although it can display them. Ami lists for $199 and is Windows-compatible.

Ami Pro 2.0, which is scheduled for release this summer, will cost $495, and users of character-based packages can buy Ami Pro for $149.

## Lotus responds

*Comments from Said Mohammadioun, vice president of word processing:*

**Performance:** It's not likely that we can surpass the performance of the character-based programs. When you have a graphical program you carry a higher burden of processing. All the text has to be handled in graphics mode. You have to live with performance issues because of the environment.

**Editing capability:** We have done a number of things in Release 2.0 to beef up the handling of long documents, master documents and referencing.

Ami Pro works with popular grammar checkers. We have resisted putting one in because grammar checkers aren't currently at a level that is useful to a broad base of users. That may change. We don't have a flat file manager, but we have interfaces to a number of excellent third-party programs.

**Documentation:** The macro documentation is on-line. A paper copy is available free if users want it. It's basically an attempt not to ship 350 more pages with every box.

### NEXT WEEK

▶ Reviewers found IBM's Displaywrite Version 5.0 weak in editing and printer support, although it has adequate proofing and mail-merge capabilities.

COMMENTARY

*Andrew Llana*

# Reconsider the modem

Network planners caught up in spiraling leased-line costs are paying closer attention to dial-up lines as a cost-effective alternative for many data communications applications.

Dial-up line prices keep coming down, and modems keep getting faster and more reliable. The 9.6K bit/sec. CCITT V.32 standard has been around long enough for users to be able to purchase V.32 modems for less than $1,000. Recently, modems moved up yet another notch in speed to 14.4K bit/sec., with the V.32 bis standard.

Through the CCITT V.42 bis data compression standard, dial-up modem speeds are getting even faster. For example, AT&T Paradyne recently introduced the Comsphere 3800 modem, which supports V.42 bis compression to reach speeds of up to 57.6K bit/sec. The standard provides faster speeds than earlier proprietary compression schemes, which, unlike standardized schemes, did not support communications across different vendors' modems.

Design concepts for the new dial-up modems offer the network planner the best of two worlds. Several manufacturers offer modems that can communicate over two-wire dial-up lines and four-wire leased lines.

*Continued on page 44*

# System eases firmwide software updates

*Management from a single point by moving upgrades to mainframes, servers, PCs and LANs*

BY JOANIE M. WEXLER
CW STAFF

NEW YORK — Spectrum Concepts, Inc. recently addressed a budding need within very large firms to automatically update personal computer-based software applications firmwide from a mainframe or OS/2 repository.

Spectrum Concepts' neophyte $150,000-and-up Xcom/Software Distribution System (SDS) will reportedly link IBM MVS mainframes, file servers, personal computers and local-area networks so that Systems Network Architecture (SNA) and LAN software updates can be handled from one administrative workstation.

Xcom/SDS is based on Spectrum Concepts' multiplatform LU6.2 file-transfer application, Xcom 6.2, currently installed at about 200 sites. LU6.2 is an interface developed by IBM to allow computer-to-computer communications in SNA networks without mainframe intervention.

### Netware first

In the LAN environment, Xcom/SDS will first be ported to Novell, Inc. Netware servers by the end of the year, the vendor said. The move should allow software updates to automatically span hierarchical SNA networks linked to flatter topology Netware LANs.

However, this is a need that is still emerging, according to International Data Corp. analyst Doug Gold. Currently, he said, "only 5% of LAN traffic leaves the LAN, and mission-critical applications from Big Blue haven't really migrated to the LAN environment."

Moreover, while choosing market share leader Novell as the first LAN server platform could beef up Novell's image in enterprise networking, it may not serve the crop of users — such as Banyan Systems, Inc. customers also running SNA networks — who are hungriest for the function.

Banyan networks tend to be more sprawling than Novell LANs and thus find large-scale software distribution a bigger issue. Currently, Netware servers update software across individual, traditionally small LANs, not corporatewide networks.

"Our Novell servers are not connected," explained Herbert Jung, senior programmer/analyst at National Starch & Chemical Co.'s information center in Bridgewater, N.J. "Each work group's software is homegrown to its special needs. I don't see us downloading software from our mainframe to many departments."

"Most of my LAN programs

*Continued on page 45*

**FEATURE: INTERCONNECTING USERS**

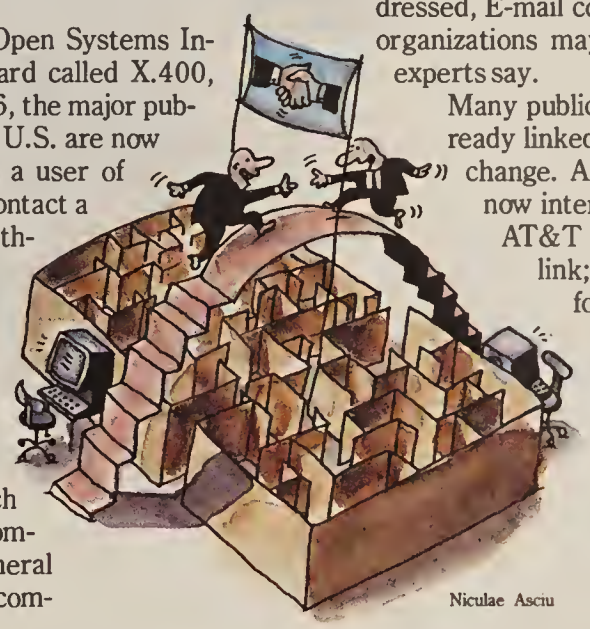
# E-mail gaps not quite bridged yet

BY LUCIE JUNEAU
SPECIAL TO CW

It may be easier now for electronic mail users to contact one another, but apparently, many users haven't yet received that message.

Thanks to the Open Systems Interconnect E-mail standard called X.400, first implemented in 1986, the major public E-mail services in the U.S. are now interconnected, enabling a user of one vendor's service to contact a user of another service without switching carriers.

"If you want to talk to someone with a commercial account, you don't have to have five or six commercial accounts to ensure you can get a message across," says Rich Miller, director of the communications group at General Magic, Inc., a consulting company in Mountain View, Calif.



Niculae Asciu

Analysts agree that this is a big step forward, but they say relatively few users of internal E-mail systems are making use of the interconnectivity made possible by X.400. Until services are easier to use and some basic issues are addressed, E-mail communications between organizations may remain limited, some experts say.

Many public E-mail services are already linked to permit message exchange. Among services that are now interconnected are AT&T's AT&T Mail and AT&T Easylink; Compuserve, Inc.'s Infoplex; MCI Communications Corp.'s MCI Mail; U.S. Sprint Communications Co.'s Sprint Mail; BT North America, Inc.'s Dialcom and Ontyme; IBM's Information Network; Infonet Computer

*To page 46*

# Management product 'videotapes' network activity

BY ELISABETH HORWITT
CW STAFF

MARLBORO, Mass. — Concord Communications, Inc. has introduced what the company claims is the most sophisticated enterprisewide local-area network management product on the market to date.

Trakker captures "every single network transaction that is taking place or has" on all networking protocol levels from the application down to the access layer, Concord spokesman Michael Zak said.

A Sun Microsystems, Inc. Sun-4 machine or compatible installed at each LAN takes all of this information and processes it in real-time mode so that when something goes wrong, the user has a picture of exactly what was happening at any given time that a problem may have occurred, he added.

Trakker provides "full-motion video" presentations of network activity, while other products take a "snapshot" of what is happening on the network at one particular moment or series of moments, said Thomas Wood, senior industry analyst at Business Research Group in Newton, Mass.

### Re-creation difficult

The drawback of this latter type of analysis is that it may be hard to re-create the circumstances when the problem took place in order to take a picture of it, Zak said. "If it does what it says it does," Wood said, Trakker will provide the mainframe-quality network diagnostics that users have been waiting for in order to move mission-critical applications onto LANs.

The question is whether enough users are willing to pay $18,000 for the basic Trakker system, plus $5,200 for each LAN they want to manage.

Harvard University "would like to be able to afford Trakker's functionality," said Scott Bradner, a technical associate at the university. In particular, Harvard would like to make use of the product as part of the LAN management services that it now provides to institutions such as hospitals, he added.

One unique Trakker feature that Bradner wished he could afford is the ability to "keep a real-time history and then do a post-analysis" of packets being sent across the network, he said. "Novell, Inc.'s Lantern allows some packet capture, but memory and speed are limited."

### Programmed for alarm

Trakker can be programmed to give an alarm when a network connection fails or some other key event occurs, Zak said. Alternately, if a user calls in to report a LAN failure, the system can go back and look at exactly what was happening in that segment at the time, he added.

Trakker requires Sun-4 workstations at each LAN and at the central site that collects and diagnoses data about each LAN. This level of processing power is needed in order to listen to and capture information on all protocol levels for 100 or more LANs across the enterprise, Zak said.

Trakker is said to collect information about retransmissions, duplicate network addresses, time outs, disconnects, flow-control messages, failed connection attempts, server use by application protocol type and sources of network use.

Trakker is also said to analyze Transmission Control Protocol/Internet Protocol, Sun Network File System and Digital Equipment Corp.'s Decnet and Local Area Transport protocols. Trakker does not support Open Systems Interconnect protocols, although Concord Communications officials said it will eventually be merged with a Concord product that provides OSI support.

Analysis of Novell's Netware and Apple Computer, Inc.'s Appletalk is slated for next year. The product, which is available now, runs on Ethernet networks, with Token Ring support slated for next year, Zak said.

# 28½

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HEWLETT PACKARD

# Llana

FROM PAGE 41

This allows the network planner to start out with a dial-up strategy and later move to a dedicated leased-line arrangement if necessary.

Users with extensive inventories of the older V.22 bis 212A and 103 modems will be happy to learn that the new dial-up modems support backward compatibility. This makes phased migration to the newer models a lot easier.

Self-diagnostics is another area in which modems have shown marked improvement lately. New Age modems support a full complement of self-test, local and remote loop-backs with some products supporting V.54 test standards.

Some of the new dial-up modems, like their leased-line diagnostic cousins, provide a front panel LCD display to test alarms and to detail information such as connect status, speed, type of error, compression status and so on.

Some vendors support a central site carrier that can be equipped with dial-up modem cards, allowing the network manager to centralize network control. Good examples are the AT&T Comsphere 3000 and the Racal Milgo RDM 1690 chassis units.

These New Age modems can be controlled by a special network management system, such as AT&T Paradyne's Comsphere 6700 Dial Network Management system and Racal Milgo's CMS 400. Many are PC-based, MS-DOS, 386/486 platform products that use windows-based, menu-driven applications software. Information such as Receive Signal Level, Signal Quality and the like is easy to identify for a selected loop in the network, while diagnostics can be run nondisruptively.

AT&T Paradyne and Forval are among the first dial-up modem vendors to provide a feature traditionally associated with leased-line modems: software-defined field upgradability. Software upgradability represents a dramatic departure from previous modems, whose features and functionality required a board or chip installed by a trained technician.

This approach makes obsolete the need for field technician support and further reduces the costs of routine maintenance and feature enhancement, preserving the user's investment in equipment.

Llana is a consultant at Vermont Studies Group in King of Prussia, Pa.

## A variety of features

Many major modem vendors have introduced products that support a full range of useful features, including centralized network management, dial-up and leased-line connections, V.32 bis transmission and V.42 bis compression standards and diagnostic features. The following support almost all of the above features:

- Racal Milgo, Fort Lauderdale, Fla.: RMD 3264, 3222.
- Forval America, Inc., Midville, Utah: IM 14400, SA 14400.
- AT&T Paradyne, Largo, Fla.: Comsphere 3810, 3820.
- Codex Corp., Mansfield, Mass.: 326X.
- NEC America, Inc., San Jose, Calif.: 9635E.
- UDS/Motorola, Huntsville, Ala.: Fasttalk V.32/V.42b.

# NET bounces back, announces products

BY JOANIE M. WEXLER
CW STAFF

REDWOOD CITY, Calif. — Wide-area networking company Network Equipment Technologies, Inc. (NET) appears to be reviving after a year of reversals in revenue, earnings and technology development.

The company recently announced the LAN/WAN Exchange, a set of cards with multiprotocol routing capabilities, slated to ship in September, as options to its high-end IDNX T1 multiplexer. A frame-relay IDNX interface is scheduled for mid-1990.

The introduction is NET's first in the area of frame relay, which one analyst pegged as "about a year behind all the other major T1 vendors."

Based on Cisco Systems, Inc.'s router code, the cards will bundle the routing of Digital Equipment Corp.'s Decnet, Transmission Control Protocol/Internet Protocol, Xerox Network Service (XNS) and Novell, Inc.'s IPX/SPX communications protocols into the IDNX.

The company also announced three other products last week. One, a $6,000 low-end multiplexer, is said to combine packet- and circuit-switching and support for international and network management industry standards.

### Shipping this fall

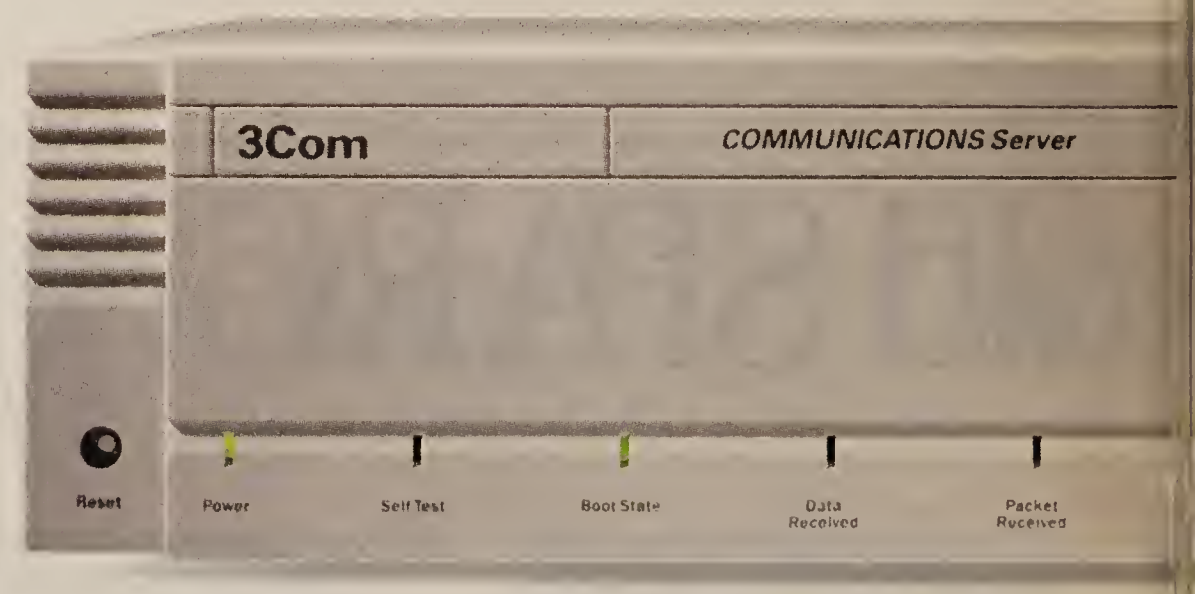
NET said the ADNX/60 low-end multiplexer will ship this fall and multiplex 9.6K- to 256K bit/sec. voice and data traffic onto the company's high-end IDNX multiplexer backbone.

The ADNX/60 targets remote company sites and is reportedly compatible with major European standard interfaces.

The company also plans to introduce its NET Fax Digitizer, a stand-alone product that connects to an RS-232 port on a NET multiplexer and integrates fax traffic onto the T1 network.

NET also rolled out an expert system-based Expert Fault Management System application that is said to perform automated fault management.


It's never met a pr

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# System eases

FROM PAGE 41

have customized settings or parameters. How can one centralized manager handle the proper parameters networkwide?" added Peter Storer, manager of information services at The Acord Co., a Novell shop in White Plains, N.Y.

Storer acknowledged, however, that "there could be a real benefit to companies with multiple servers scattered across the country."

That description fits Banyan's Virtual Networking Software (Vines) users. One Vines user, Nissan Motor Corp.'s James Martin, a technical consultant in the information systems department in Carson, Calif., said he already has LU6.2 running between his mainframe and Application System/400 midrange system.

"There is nothing addressing software distribution built into Vines right now," he said, "but that capability is on the Banyan user group's request list."

Banyan said it currently offers the Vines Distribution Service, which updates software networkwide but does not address the SNA environment.

## SDS competitors

One Spectrum Concepts competitor in the electronic software distribution arena is IBM, with its Netview Distribution Manager.

In its current state, however, IBM's product uses commands recognized only by IBM software and is supported only on IBM's OS/2 and 3174 platforms.

Another competitor is Tangram Systems Corp., whose AM:PM product is based on IBM's 3270 terminal-to-host protocol. Spectrum Concepts' product is based on LU6.2, IBM's interface for "peer-to-peer" computer communications.

"Using LU6.2 means there's nothing to stop Xcom/Software Distribution System from going to [Apple Computer, Inc.'s] Macintosh, [Digital Equipment Corp.'s] VAX and Hewlett-Packard [Co.'s] computers through a single interface," said Dick Boyle, program director of local-area communications service at Gartner Group, Inc. in Stamford, Conn.

"You can't do that if you're building off a 3270 base. That will hurt Tangram as IBM rolls out advances in its networking environment based on LU6.2 over the next six months," he added.

JOANIE M. WEXLER

# Interconnect outlook unclear

BY JIM NASH
CW STAFF

It remains to be seen how much of a market exists for the new Openconnect Systems, Inc. gateway between Systems Network Architecture (SNA) and Transmission Control Protocol/Internet Protocol (TCP/IP) networks, according to some users and industry observers.

The Carrollton, Texas-based company began shipping the software-only Openconnect Server II last month. Server II runs on the IBM RISC System/6000 and allows SNA Netview management of TCP/IP networks.

Previously, Netview management ended at the gateway. Server II takes management through the gateway. A spokesman for Openconnect said a version compatible with Sun Microsystems, Inc. workstations is due out in late summer or early fall.

Just who will pick up on the new product, however, is a question. "The most obvious question is, why? There are better ways of handling [SNA-to-TCP/IP communications]," said Russ Bergerson, a network specialist at First Interstate Bank of Oregon in Portland.

Los Angeles-based First Interstate Bancorp is consolidating several of its computer systems. A number of computers from First Interstate's Los Angeles office run on TCP/IP, in contrast with the largely SNA-based systems in Portland, Bergerson explained.

Software exists to automatically transfer files in bulk at predetermined times, Bergerson said. Between the mass dumps, smaller transfers can be done among desktop systems that can log on to either SNA or TCP/IP networks.

Steve Tindall, a project leader at the McGaw Park, Ill., division of Baxter Healthcare Corp., said only the acquisition of another company using TCP/IP would prompt the need for such a gateway at Baxter. Were that to happen, Tindall said, a gateway such as Openconnect would be used to centralize management of the companywide computer system.

"I'm sure somebody somewhere needs that gateway," Bergerson said, "and I'm sure they are in the federal government," where TCP/IP and SNA more commonly coexist.

Tom Nolle, president of CIMI Corp., a consulting firm in Voorhees, N.J., agreed. Last year, CIMI conducted a survey of large companies running SNA networks and found that very few classified themselves as TCP/IP users, Nolle said.

The spokesman for Openconnect said he could not give detailed figures on the universe of potential clients but added that the firm expects "several companies" will be able to compete in the market in the near term. SNA may be losing its appeal, but it is not waning quickly, even though at the same time more companies are migrating to TCP/IP, he said.


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# E-mail

FROM PAGE 41

Sciences Corp.'s Notice; and General Electric Information Services' Quik-Comm.

In addition, corporate E-mail packages can connect with public services via X.400. For instance, Hughes Aircraft Co. uses an X.400 gateway to connect to MCI Mail. "The gateway takes an internal address and converts it to the X.400 addressing format," says Steve York, manager of the information exchange technologies group at Hughes Aircraft. "MCI recognizes that and passes it along to the [addressee's] service provider, who in turn will deliver it to the appropriate recipient on the other end."

### Potential problems

The process of sending from one E-mail system to another isn't as convenient as most users would like it to be, and attempting to send anything but text may spell problems.

Attaching a spreadsheet or a graphics file to a message is risky. "There are inconsistencies in the way X.400 is interpreted," explains Vic Wheatman, program director of interenterprise systems at Gartner Group, Inc., a consulting firm in Stamford, Conn. "Most interconnections are based on the 1986 X.400 version. We're just starting to implement [the] 1988 [version], which adds some capability to move attachments with a message."

Even pure text messages can go astray if you are not careful to enter the correct X.400 address, users and analysts say — and determining that address can be difficult.

Although longer than the addresses used by most proprietary E-mail packages, X.400 addresses aren't very intuitive. Despite the X.400 standard, addressing conventions vary from one E-mail system to the next.

"Some 400-based systems interpret the X.400 standard a little differently," Wheatman said. "If I'm sending someone a message from my own E-mail and I use his middle initial, maybe his system doesn't recognize the initial and rejects the message."

An even bigger problem is the lack of a central directory for retrieving addresses. "There's nowhere to look up names," says Nina Burns, president of Network Marketing Solutions, a consulting firm in Menlo Park, Calif.

Most of the public E-mail services publish on-line directories of the addresses of users on their own systems, but obtaining addresses for users of other public services is a much greater challenge. "Let's say my private system is hooked into Sprint. There's a pretty good chance of getting directory information about other users of Sprint, but very little chance of getting information about addressing a user of AT&T Mail, even though AT&T and Sprint are hooked up with one another," Miller says.

The solution to this dilemma may come with the development of a new standard, X.500, which represents an attempt to establish a means of exchanging directory information between E-mail systems, Miller says. Specification for the X.500 standard should be complete in 1992, after the resolution of a number of technical issues, according to Burns.

The standards committee must resolve the issue of name discrepancies, for instance. "What happens if you say 'Norm' rather than 'Norm Schwartz'? Or what if there are two 'N. Schwartzes'?" says Walter Ulrich, a director at Arthur D. Little, Inc. in Los Angeles.

Corporations also need to decide how much access they want to give other people to their directories, Burns says: "Will people using MCI be able to search AT&T directories? As a corporation, should I make my directory available to anyone who wants it?"

Finally, the standards committee must also determine who will operate the directory service.

### Initial hassles

Until X.500 is implemented, users will continue to grope for addressing information. People don't often exchange E-mail addresses when making new contacts; as a result, most Rolodexes include phone numbers and addresses but not E-mail addresses, Ulrich says.

"Sometimes, we have to establish voice communications to establish the [X.400] address," says Gordon Preston, E-mail manager at Du Pont Co., an organization that uses Hewlett-Packard Co.'s X.400 gateway and includes 95,000 E-mail users worldwide.

To facilitate E-mail exchanges, some users are starting to print their E-mail addresses on their business cards.

"In E-mail circles, it's the fashion to have a business card with your X.400 address," Wheatman says. However, this can make for a rather unwieldy card: An X.400 address adds roughly eight extra lines, he says.

Juneau is a free-lance writer and editor based in Salem, Mass.

## Using the gateway for effective E-mail

With address in hand, the physical act of sending X.400 electronic mail is not difficult. To establish E-mail contact with users outside its own system via X.400, a company can either develop its own X.400 gateway to a public E-mail service or connect directly to the service, letting the carrier convert its internal E-mail address format to the X.400 format.

Running an X.400 gateway is more expensive than relying on a carrier's X.400 conversion capabilities, Network Marketing Solutions' Nina Burns says.

There are some real benefits to a gateway, though. Maintaining its own gateway gives a company capabilities for error tracking, built-in acknowledgment, real-time connection and full status reporting of sending and receiving functions, says Steve York, manager of the information exchange technologies group at Hughes Aircraft.

The Boeing Co.'s gateway provides a buffer zone between internal mail and mail going to non-Boeing sites, says Laurie Bride, Boeing's manager of communications technology. Using a gateway also allows Boeing to implement audit trails, she says.

On the other hand, public E-mail carriers offer some extras — such as folder sharing or quick addressing capabilities for frequently used destinations — to those that access their services directly rather than through an X.400 gateway, analysts say.

## NEW PRODUCTS

### Network management

Security Dynamics, Inc. has designed a network access security product for client/server computing environments.

Ace/Server provides each user with a SecurID card that displays a unique access code that changes every 60 seconds. Access is controlled from the server, although resources on client machines remain secure when the client is temporarily removed from the network, according to the company.

Audit trails and access monitoring are also on the server, providing centralized accountability and control, according to the vendor.

Entry-level Ace/Server systems are priced at approximately $5,000.

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Gateway Communications, Inc. has announced Etherstat, a network monitoring software utility.

The product monitors performance of Ethernet local-area networks in real time and captures and displays data packet contents according to user-definable filter criteria. Network information can be saved automatically for subsequent analysis.

Etherstat ($250) runs on a personal computer requiring a LAN adapter from Gateway Communications; other network nodes may run any networking hardware and software.

**Gateway Communications**
**2941 Alton Ave.**
**Irvine, Calif. 92714**
**(714) 553-1555**

### Local-area networking hardware

Allied Telesis, Inc. has introduced an Ethernet repeater/hub that sells for $895.

The AT-3012T provides 12 unshielded twisted-pair ports as well as an IEEE 802.3 interface port with diagnostic indicators for each network segment. Simple Network Management Protocol support is available as an option.

The company has also introduced a line of miniature twisted-pair repeaters. The MR410T with four ports ($410) and the MR810T with eight ports ($445) measure 8- by 4½- by 1 in.

**Allied Telesis**
**575 E. Middlefield Road**
**Mountain View, Calif.**
**94043**
**(415) 964-2771**

Nuvotech, Inc. has announced a network management hub for Apple Computer, Inc. Localtalk networks using telephone wiring.

Nuvostar ($1,495) offers 24 ports and 230K byte/sec. data transfer. It features password-secured remote management software and 32K bytes of static random-access memory.

**Nuvotech**
**2015 Bridgeway**
**Sausalito, Calif. 94965**
**(415) 331-7815**

Dayna Communications, Inc. has introduced a $399 Ethernet adapter for Apple Computer, Inc. Macintosh systems.

The Daynaport E/Z connects to 10Base-T, thick and thin Ethernet and fiber-optic cable networks. Ethertalk, Transmission Control Protocol/Internet Protocol and other communications protocols are supported.

It connects through the printer port, allowing Macintosh models with no expansion slot to be added to the network.

**Dayna Communications**
**Suite 530**
**50 S. Main St.**
**Salt Lake City, Utah 84144**
**(801) 531-0600**

### Local-area networking software

Frontier Technologies Corp. has announced SuperTCP for Microsoft Corp.'s Windows.

The product offers concurrent Transmission Control Protocol/Internet Protocol and Open Systems Interconnect networking under a Windows 3.0 environment. SuperTCP capabilities include object-oriented file transfers, multiple document electronic mail, network printing and Simple Network Management Protocol support.

The basic package costs $495.

**Frontier Technologies**
**10201 N. Port Washington Road**
**Mequon, Wis. 53092**
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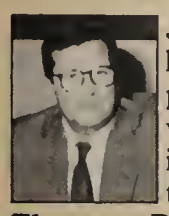
## EXECUTIVE TRACK



**John Petrino** has been appointed senior vice president of information technology at **Thomson Professional Publishing,** a Webster, N.Y.-based division of Thomson Corp.

Petrino has worked for Thomson Corp. for nine years, most recently as executive vice president of the Collision Group and senior vice president and general manager of the Mitchellmatix Division of Mitchell International in San Diego.

Before that, he was vice president of operations at Warren, Gorham and Lamont in Boston, with responsibility for MIS development and operations.

**John R. Rueckel** was named vice president of information systems at **Thomson Professional Publishing.** He had been director of management information services at John Wiley & Sons in New York for the past four years. Before that, he spent 17 years in IS management positions at ITT Corp.'s headquarters in New York.

**Kenneth Graham** has been promoted to vice president of IS at **Robert Mondavi Winery** in Oakville, Calif. He had been director of MIS at Mondavi.

Graham, 59, joined Mondavi in 1989 from a financial services firm that he founded. Before that, Graham spent 23 years in IS positions at E. & J. Gallo Winery in Modesto, Calif. He began his IS career as a systems analyst at The Boeing Co. in 1955.

**Charles C. Emery Jr.** has been named chief information officer at the University of Texas M. D. Anderson Cancer Center in Houston.

Emery had been vice president of information services at Samaritan Health Services in Phoenix for the past six years. Samaritan, an $800 million operator of nine hospitals and 14 clinics, has not named a replacement.

# Rx for health costs: A dose of IS

*Better use of computers could help the health care industry cure itself of huge bills*

BY MITCH BETTS
CW STAFF

Tom Monahan

When removing a splinter can cost $3,700, and with the total U.S. health care bill skyrocketing to an estimated $750 billion this year, it is not surprising that politicians and business leaders are searching for ways to wring inflated costs and inefficiencies from the nation's health care system.

Political debates over structural reform are heating up, but some experts argue that information systems could also play a significant role in curbing the nation's runaway medical costs if the health care industry can catch up to other industries in the use of computer technology.

Technologies such as expert systems for spotting overcharges on doctor bills, on-line patient records and electronic data interchange (EDI) can sharply reduce the costs associated with unnecessary operations, tests and paperwork, they say.

Unfortunately, most of the automation in the health care industry to date has been limited to billing and other back-office systems. In a survey of 400 hospital IS managers earlier this year, 83% of the managers acknowledged that hospitals are far behind other businesses in the use of computers, according to the Healthcare Information and Management Systems Society (HIMSS) in Chicago.

"Hospitals have significantly automated the so-called bookkeeping elements of their operations, though clearly even this effort needs to improve," says John Glaser, director of information services at Brigham and Women's Hospital in Boston. He says the next wave of IS investments will be made to help nurses and doctors work more efficiently to provide better patient care.

### No funds for IS

However, the hospital industry is finding it hard to come up with money for IS investments. "The health care industry is very conservative and doesn't have much capital lying around. The combined effect is that it's not putting as much money into information systems as it would like to," says Richard P. Covert, acting director of the HIMSS, a unit of the American Hospital Association.

The use of IS for cost containment is championed by the insurance industry and other advocates of the "managed health care" concept, which depends heavily on software and databases to review costs before, during and after medical treatments.

Roughly 30% of the nation's health care bill is "fat" — a combination of gross inefficiency and fraud that could be eliminated by IS-based managed-care initiatives, says Charles J. Singer, an IS consultant in Wakefield, Mass., who specializes in the health care field.

"The tool to improve quality and lower costs is information management," declared insurance executive Joseph T. Brophy in a recent speech in Washington, D.C. Brophy, president of the managed care operation at The Travelers Corp. in Hartford, Conn., was previously the top IS executive there.

According to Brophy's vision, the health care industry must "get the technology out of the back office," revamp its systems to support managed

*Continued on page 48*

# The impossible dream: Having time to think

BY JIM NASH
CW STAFF

Moses went to Mt. Sinai to receive divine inspiration. President Dwight Eisenhower built Camp David. Superman has his Fortress of Solitude. Microsoft Corp. Chairman Bill Gates just stays home and unplugs the phone and fax for one week.

But where do information systems executives go to get away and think, to quietly seek insight into the barrage of trends and technologies? In a corporate culture in which most executives do not even find time for weeklong vacations, the answer all too often is: nowhere.

"That sounds like a Silicon Valley luxury to me," said an IS director at an aerospace company. He said it is hard enough even to gather key managers for a day in a conference room physically separated from their own building.

David Carlson, senior vice president of corporate IS at K Mart Corp. in Troy, Mich., said even a full day alone would be great, albeit unlikely. "I would like to do that," he said. "It's tough to lift oneself above the daily grind to focus a month out. It's even harder to look a year out."

**Rund:** *There is little time for making long-term plans*

"I haven't had a vacation in two years," said Bill O'Kelly, information center manager at Columbia Pictures Entertainment, Inc. in Los Angeles. O'Kelly said he can't imagine a solo professional retreat. Columbia is more likely to hire a consultant for an outsider's opinion of the firm's performance, he said.

"We're so wrapped up in execution," agreed Donna Rund, director of information engineering at San Francisco-based Levi Strauss & Co. There is little time for much else, Rund said.

Levi Strauss, is trying to start a new pattern. Rund said the IS department is forming a group of four to six full-time strategists and policymakers to do nothing but devise and nurture far-reaching plans.

Hugh Naughton, IS director at the Gas Research Institute in Chicago, takes 30 minutes each morning "to contemplate my navel." Naughton said he sees the value of taking at least one day to think about the long term.

"I'm sure it would make you question very seriously what you do every day."

# Health costs

CONTINUED FROM PAGE 47

care and build huge databases of demographic, claims and medical information to search for the most cost-effective medical treatments and providers.

Travelers has taken several steps toward that vision, including extensive use of EDI and a new mainframe-based managed care database that can be accessed by 30,000 employees and more than 1,000 corporate customers nationwide. The company is even considering the use of neural network technology to help identify hospitals and doctors that tend to provide below-par services, Brophy says.

Another insurer, Blue Cross/Blue Shield of Massachusetts, is shifting its business focus to managed care by giving health care providers increased on-line access to its claims processing database [CW, May 20].

However, skeptics say that managed care will, at best, produce a slight drag on rising medical costs. At worst, it will create a second-guessing bureaucracy that actually increases costs. But advocates argue that by monitoring costs and quality, the industry is bound to become more efficient, and consumers will get more value for the dollar.

### High-tech waste?

Could big-ticket investments in computer systems end up increasing costs instead? "It's very possible that a lot of technology initiatives will be poorly managed and will waste money in the short term," Singer says. "But in the long term, we're moving toward a free-market model, and anybody that is grossly inefficient will be out of business in two to four years."

One of the popular IS applications for cost containment is the use of expert systems to spot errors and "creative billing" in doctors' bills. Donna Hummer, medical management coordinator at Western Life Insurance Co. in St. Paul, Minn., says software from Boston-based Health Payment Review, Inc. is saving her firm nearly $30,000 per month.

By integrating off-the-shelf expert systems with their claims systems, insurance companies typically reduce their total claims payments by 1% per year, Singer says. "It doesn't sound like much, but if you're paying $100 million a year in claims, 1% is $1 million."

"Creative billing" involves the manipulation of the five-digit codes for medical procedures, explains Steve Nelson, president of Medical Bill Review, Inc. in Naperville, Ill. The strategies include "upcoding," which is billing for a more expensive treatment than the one actually performed, and "unbundling," which is billing for each part of an operation instead of using the proper (and less expensive) code for the whole operation.

Insurance companies are also employing expert systems to determine whether an expensive medical procedure (such as coronary bypass surgery) is the best course of action. Studies show that as much as 30% of health care service provided in the U.S. may be unnecessary, ineffective or inappropriate.

Vendors of this medical-review software include the following firms: Concurrent Review Technology, Inc. in Shingle Springs, Calif.; Value Health Sciences, Inc. in Santa Monica, Calif.; Optimed Medical Systems, Inc. in Lexington, Mass.; and Utilization Management Associates, Inc. in Wellesley, Mass.

Another technique is to give doctors feedback on their practices by using computer databases to spot unusual patterns, such as performing three times more tonsillectomies or hysterectomies than other doctors in the same locale.

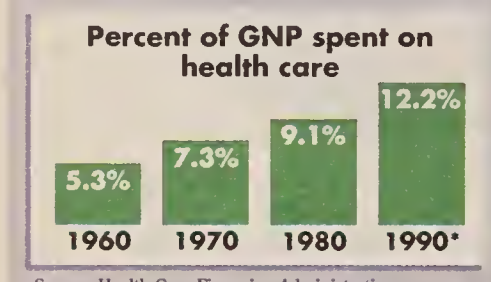
The database can be built by combining demographic data, hospital discharge data, insurance claims and Medicare cost data and then adjusting it for such risk factors as age and gender, according to Stephen C. Caulfield, managing director at the Boston office of William M. Mercer, Inc. "Physicians are very keen to learn more about their practice and to improve upon it . . . but the data has to be presented in a nonjudgmental way," he says.

A more traditional job for IS is to improve the efficiency of the industry's administrative operations, which represent 5% to 15% of the cost of health care. There is widespread agreement that IS in the health care industry is outdated: about five to 10 years behind the level of automation in other industries, says Singer, formerly an IS consultant at the Index Group, Inc. in Cambridge, Mass.

As in other industries, however, technology availability does not mean technology use. Singer laments the fact that doctors with computerized billing systems routinely send printouts in the mail to insurance companies, who then must reenter the data into their computer systems. "Today, less than 5% of claims in the U.S. flow through the system electronically," he says.

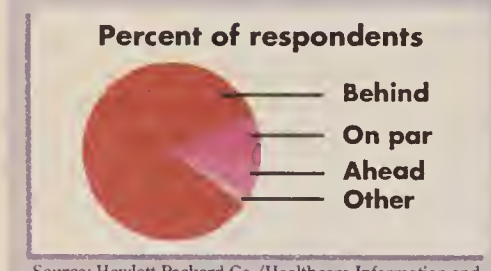
### Takes more than money

**Although the portion of the U.S. gross national product (GNP) that is spent on health care has more than doubled since 1960 . . .**




Source: Health Care Financing Administration

**. . . hospitals are still behind other businesses in computer automation**
(Survey of 400 hospital IS professionals)




Source: Hewlett-Packard Co./Healthcare Information and Management Systems Society survey

*Estimated

CW Chart: Doreen St. John

# Automating records

A quantum leap toward efficient health services will require the medical community to convert the traditional medical chart to a computer-based patient record during the next 10 years, according to a new study by the National Academy of Science's Institute of Medicine.

One way that computer-based patient records would moderate health care costs is by reducing the number of redundant medical tests done because previous test records are not available, the study says.

Today, the thick paper charts are often missing, inaccurate or illegible, and most people have a hodgepodge of records for each doctor they visit. The institute is calling for a distributed database to electronically consolidate the records on each patient, but it acknowledges that there will be privacy concerns, especially when the records are shared with insurance companies and other third parties.

Automated medical records would also make it much easier for researchers to study the effectiveness of patient care. One of the best-kept secrets of the medical community is that only 10% to 20% of medical procedures have been thoroughly studied to determine whether they really benefit the patient, experts say.

MITCH BETTS

MANAGEMENT BRIEFS

# ASM signs on first group of Soviet members

Eleven **Soviet information systems professionals** have become the first Soviet members of the **Association for Systems Management (ASM)**. The Soviet members will form the basis for an ASM Moscow chapter to be chartered in the future.

ASM's Soviet Sponsorship program, established earlier this year, allows Soviets to join the Cleveland-based association without concern over converting their rubles to U.S. dollars. ASM's North American chapters pay the annual membership dues for Soviet members.

The 11 professionals all work at Moscow-based institutes and are involved in studying the computerization of the Soviet economy. Three work at the International Institute of Management Problems.

A recent survey by **Ouellette & Associates Consulting, Inc.** in Bedford, N.H., found there is more talk than action from IS professionals in improving interpersonal skills. While 83% of those surveyed said they were motivated to improve such skills, only 36% had been to as many as two interactive skills training sessions in their IS careers, which averaged 13 years in length.

The survey of 282 IS professionals was conducted by Debra Gash, a former professor at Michigan State University now working as a change management consultant at Unisys Corp. in Cambridge, Mass.

**John Covin** was named chairman of the **Mumps Users' Group** at its 20th annual meeting last month in New Orleans. Covin is vice president of IS and services at Scicor Corp., a pharmaceutical safety testing laboratory firm. He has worked with the Mumps programming language for 11 years as a programmer/developer and currently manages Scicor's Mumps system, used by 275 employees.

Thomas Salander of The Connections Group Ltd., a Mumps training and development firm, was elected vice chairman of the user group. Three board members were reelected. They were Elliot Shefrin of the Gerontology Research Center at the National Institutes of Health, Robert Craig of Digital Equipment Corp. and Greg Shorr of Indian Health Service.

Eight Washington, D.C.-area universities have created a common database of bibliographic information shared over a wide-area network. The **Washington Resource Library Consortium network** allows students and researchers at each university to access resources of all eight libraries with a single command.

Participating consortium members are American University, Catholic University of America, Gallaudet University, George Mason University, George Washington University, Georgetown University, Marymount University and the University of the District of Columbia.

# Firestone move leaves IS behind

AKRON, Ohio — Bridgestone-Firestone, Inc. will put rubber to the road and move its corporate headquarters to Nashville by the end of the year. The tire maker's data center, however, will remain here, according to Drector of MIS Bill Illitch.

Illitch said he did not expect to eliminate any of the approximately 70 full-time and 10 to 15 part-time information systems employees now in the facility. However, the MIS chief was less certain about the fate of the systems development group, which employs roughly 80 people, including support staff.

"We're still in the process of sorting it out," Illitch said. He added that ongoing systems projects should hold the current staffing level steady.

Illitch, previously the MIS manager responsible for international and diversified products, took over the top IS slot after the departure of Vice President of Information Systems Robert L. Malizia, who resigned April 5.

Japanese-owned Bridgestone-Firestone employs 1,350 people here.

## CALENDAR

The Urban & Regional Information Systems Association (URISA) will hold its 29th annual conference Aug. 11-15 in San Francisco. The conference features management, applications and technology tracks geared toward IS professionals in local, state and federal government and related private sector environments.

The keynote speaker is Taeko Matsuda, retired president of Japan's Nippon Homes, which pioneered many computer mapping applications.

For more information or to register, contact URISA, Washington, D.C. (202)´289-1685.

### JULY 21-27

**IPO Quarterly Meeting.** Pittsburgh, July 21-26 — Contact: National Computer Graphics Association, Fairfax, Va. (703) 698-9600.

**Remittance and Dacument Pracessing Forum and Exposition.** Anaheim, Calif., July 21-24 — Contact: Recognition Technologies Users Association, Boston, Mass. (617) 426-1167.

**IRM '91.** Beaver Creek, Colo., July 22-24 — Contact: Barnett Data Systems, Rockville, Md. (301) 762-1288.

**Dawnsizing Carporate Computing.** Chicago, July 23-25 — Contact: Boston University Corporate Education Center, Tyngsboro, Mass. (508) 649-9731.

**Mactivity '91: The Macintash Cannectivity Conference.** Santa Clara, Calif., July 23-25 — Contact: Winehouse Computer Co., Los Gatos, Calif. (408) 345-2500.

**Softwore World.** Toronto, July 23-25 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-0526.

**Artificiol Intelligence and the Help Desk.** San Francisco, July 23-26 — Contact: Help Desk Professionals, Colorado Springs, Colo. (719) 531-5138.

**Carnegie Mellon University's Center for Integrated Manufacturing Decision Systems Canference.** Pittsburgh, July 24-25 — Contact: Carnegie Mellon University, Pittsburgh, Pa. (412) 268-8818.

### JULY 28-AUG. 3

**Insourcing vs. Outsourcing: Innovotion Withaut Headcount.** Hilton Head, S.C., July 30 — Contact: Betsy Gray, The Yankee Group, Boston, Mass. (617) 367-1000.

**Client-Server/Vertical Applicatians Workshop.** Redmond, Wash., July 30-Aug. 1 — Contact: Microsoft Corp., Redmond, Wash. (206) 882-8080.

**Internatianal Management Grophics User's Group Meeting.** Las Vegas, Aug. 1-4 — Contact: MGI, Minneapolis, Minn. (612) 854-1220.

### AUG. 4-10

**Ralma Technalagies Conference.** Seattle, Aug. 4-7 — Contact: Andy Rebele, The Westwater Group, Boulder, Colo. (303) 440-3410.

**Interex HP Computer Users Canference.** San Diego, Aug. 5-8 — Contact: The Interex Conference Department, Sunnyvale, Calif. (408) 738-4848.

**Software Maintenance and Re-engineering.** Washington, D.C., Aug. 5-9 — Contact: U.S. Professional Development Institute, Silver Spring, Md. (301) 445-4400.

**CASE Warld.** Boston, Aug. 6-8 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-0526.

**Implementing Re-engineering: Pracess, Taals, Techniques.** Boston, Aug. 6-8 — Contact: Hammer and Co., Cambridge, Mass. (617) 354-5555.

**Landex '91.** San Francisco, Aug. 8-10 — Contact: Local Area Network Dealers Association, Elmhurst, Ill. (708) 279-2255.

### AUG. 11-17

**Manufacturing Netwarks Canference.** Chicago, Aug. 12-13 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3880.

**Electranic Data Interchange far Government.** Washington, D.C., Aug. 12-15 — Contact: U.S. Professional Development Institute, Silver Spring, Md. (301) 445-4400.

**The Nationol Canference an Computing.** New Haven, Conn., Aug. 12-16 — Contact: The Research Center on Computing and Society, Southern Connecticut State University, New Haven, Conn. (203) 397-4423.

### AUG. 18-24

**Share 77.** Chicago, Aug. 18-23 — Contact: Share Headquarters, Chicago, Ill. (312) 644-6610.

**MIS Training Week West '91.** San Francisco, Aug. 19-23 — Contact: Pamela Bissett, MIS Training Institute, Framingham, Mass. (508) 879-7999.

**The Santa Cruz Operatian Forum '91.** Santa Cruz, Calif., Aug. 19-23 — Contact: The Santa Cruz Operation, Santa Cruz, Calif. (408) 425-7222.

**Fed Micra.** Washington, D.C., Aug. 20-21 — Contact: National Trade Productions, Inc., Alexandria, Va. (703) 683-8500.

**Fose CD-ROM Canference and Exhibitian.** Washington, D.C., Aug. 20-21 — Contact: Sylvia Griffiths, National Trade Productions, Inc., Alexandria, Va. (703) 683-8500.

### AUG. 25-31

**Surfoce Mount internationol Conference ond Expasitian.** San Jose, Calif., Aug. 25-29 — Contact: Miller Freeman Expositions, Boston, Mass. (617) 232-3976.

**Internotionol Security Conference.** New York, Aug. 27-29 — Contact: Cahners Exposition Group, Des Plaines, Ill. (708) 299-9311.

**Datobase and Expert Systems Applicatians.** Berlin, Germany, Aug. 28-30 — Contact: Dimitris Karagiannis, Ulm, Germany (011-49) 37-150-1540.

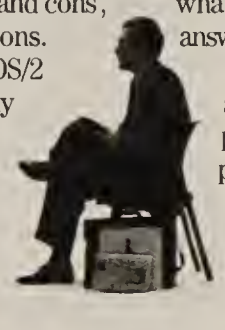
**Advanced Cammunicatians Technalagy Satellite Program.** San Jose, Calif., Aug. 29-30 — Contact: Mary B. Gibbs, Public Service Satellite Consortium, Arlington, Va. (703) 979-0801.

### SEPT. 1-7

**Very Large Data Bases.** Barcelona, Spain, Sept. 3-6 — Contact: VLDB '91-Difusora de la Informatica, SA, Barcelona, Spain (011-34) 3-418-8067.

**HD Warld.** San Francisco, Sept. 4-6 — Contact: Meckler Conference Management, Westport, Conn. (203) 226-6967.

**Unix Open Salutions '91.** San Jose, Calif., Sept. 4-6 — Contact: Unix Open Solutions '91. Needham, Mass. (617) 449-8938.

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## Featured Presentations

**Keynote Address**
Wednesday, August 14
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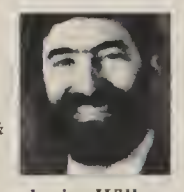


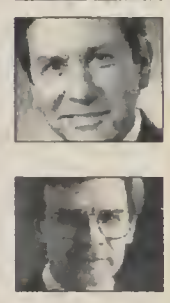
**Sheldon Laube**
National Director, Information & Technology, Price Waterhouse
***"Desktop Directions: How New Desktop Technologies Will Further Empower People"***

**Lotus Technology Briefing**
Wednesday, August 14
1:00-2:00 pm

**Dr. Frank King**
Senior Vice President, Software Business Group
Lotus Development Corp.
***"Software Applications for Working Together in the 90s"***

**OS/2 Strategy Briefing**
Thursday, August 15
8:30-10:15 am

**Lee Reiswig**
Asst. General Manager, Programming, Personal Systems, IBM
**Joe Guglielmi**
General Manager, Marketing & Business Development, Personal Systems, IBM
***"Personal Systems Software Directions"***



**Developers' Keynote**
Friday, August 16
9:00-10:00 am



**Paul Brainerd**
President, Aldus Corporation
***"Secrets to Building Successful Cross-Platform Applications Software"***

## The Exposition

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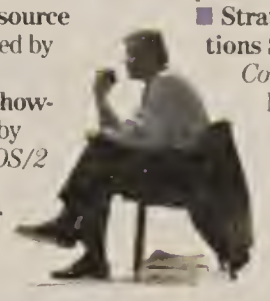
- **MultiMedia Showcase,** presented by *Windows and OS/2 Magazine*
- **Seminars For Programmers,** presented by the Boston Computer Society
- **Strategic Applications Seminars,** by *Computerworld* Magazine
- PC Concepts' **Hands-On Training**
- **Test Drive Center**



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# You think you've got budget problems?

*Corporate IS departments and end users could learn a thing or two about surviving tough times from these experienced penny-pinchers*

Katherine Lambert

**Peace Corps' Rose:** *His seven microcomputer technicians rely on 500-person corporate staff 'to learn more themselves'*

BY LUCIE JUNEAU AND JOSEPH MAGLITTA

Next time you think life is tough, consider this: The average nonprofit organization has an information systems budget totaling about $97,000 per year and a corporate mission that makes earning a profit look like a night at the opera.

True, some social services, charities, government watchdogs and others nonprofits have more to spend on IS — sometimes much more. But the majority face a daily struggle between tiny technology budgets and mind-boggling goals such as feeding starving children, fighting cancer, stimulating world economic development and saving souls.

It's no surprise, then, that many nonprofits have become adept penny-pinchers — masters at making a little computer spending go a long way. The best can even teach their fatter, for-profit peers a thing or two.

What, you ask, can a bunch of charities show us? Why, they don't even operate in the real world and wouldn't know a profit and loss statement if it jumped into their collection plate. Dead wrong, according to experts.

"Biases and misunderstandings" cloud most people's views of nonprofits, says Brian Kirk, manager of KPMG Peat Marwick's nonprofit consulting group. Too bad, he says, because "there's a lot to be learned from nonprofits in the area of information systems and in many other areas."

## Example for tomorrow

Management heavies such as Peter Drucker agree, saying nonprofits can be a rich mine of ideas and models for tomorrow's changing marketplace.

In an influential 1989 *Harvard Business Review* article titled "What Can Nonprofits Teach Us?" Drucker argued convincingly that nonprofits "are becoming America's management leaders . . . practicing what most American businesses only preach."

Especially impressive, he wrote, are nonprofits' strategizing and single-minded focus on mission. "And in the most critical area — the motivation and productivity of knowledge workers — [nonprofits] are truly pioneers."

*Computerworld* recently asked several prominent (and not so prominent) nonprofit groups for some dollar-stretching tips.

Make no mistake: In many cases, nonprofits face the same issues as their for-profit peers (see "Nonprofits not so different from you," page 52) — often with similar mixed results.

In truth, many nonprofits could learn volumes from major corporations. There's certainly nothing romantic about having to wait six months for a personal computer memory upgrade because there is no money available.

> "IN THE MOST critical area — the motivation and productivity of knowledge workers — [nonprofits] are truly pioneers."
>
> PETER DRUCKER

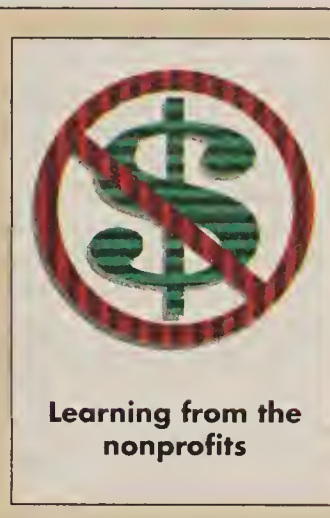
The fact remains that many nonprofits are experienced (and peerless) professionals at deploying technology in the stifling economic constraints that now bedevil many organizations.

Obviously, not every lesson will make sense for every profit-making company; some may be completely wrong for you or your end-user departments. But these days, even one fresh idea can make a difference. Here are a few lessons to consider.

■ **Lesson 1: Never miss a chance to motivate.** It's a fact of life: Many IS staffers must work harder and for less money than their peers in for-profit companies. Understaffing and small or nonexistent raises are not uncommon. As a result, Drucker says, nonprofit managers have become

*Continued on page 52*

Juneau is a free-lance writer and editor based in Salem, Mass. Maglitta is a *Computerworld* senior editor, executive report/integration strategies.



**Learning from the nonprofits**

### Key points

▶Nonprofits can teach other IS organizations some valuable lessons about operating under tight budget constraints.

▶Among the suggestions: Consider becoming a technology follower, seek out only high-payoff applications, don't get hung up on brand names, empower end users and simpify training.

▶The most important lesson, nonprofit IS managers say, is never to miss a chance to show an individual or group how their efforts advance organizational goals.

▶Despite popular perceptions, nonprofits have much in common with other IS shops (see story page 52).

▶Waiting for time-tested technology pays off for CARE, now installing a new Novell, Inc. Netware loca-area network (see story page 53).

▶QUOTABLE:

*"It's computer Darwinism: You either adapt, or you die."*

*GARY BASS*
*EXECUTIVE DIRECTOR*
*OMB WATCH*

*Continued from page 51*

especially adept at keeping up the spirits and productivity of professional workers.

While many are motivated by a dedication to the organization's cause, workers still need the same kind of professional recognition as their peers in profit-making companies.

The biggest secret, nonprofit managers say, is simple: Never miss a chance to show an individual or group how their efforts advance organizational goals.

"When you're support staff, you don't see the outcome of your work," notes Bob Bland, development director at the Union of Concerned Scientists, an independent organization that monitors the societal impact of technology. It's especially important to give such workers feedback they wouldn't otherwise get, he says.

Ways of showing IS impact differ. At the American Red Cross, Herb Drucker, chief information technology officer, makes a special effort to point out how a computer tool is being used. IS staffers "really like to see the impact in a disaster area," he says.

Opportunities for commercial IS managers may be less dramatic, but the principle still applies.

At the Union of Concerned Scientists, speakers go out of their way to report enthusiastic reactions to the staff. After one presentation last fall, junior high school students pledged that their households would adopt various energy-saving measures. "We made sure everyone was aware that the audience was very excited," Bland says.

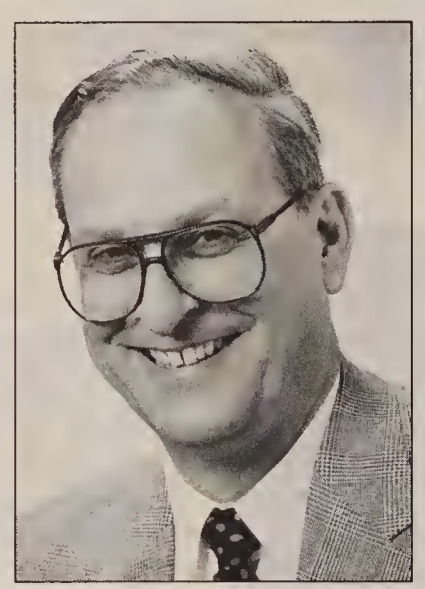
Other motivational strategies are surprisingly capitalistic. Gary Baney, chief operating officer at Easter Seal Systems, a division of the National Easter Seal Society, states: "I'm a big believer — even in the nonprofit sector — in every employee having 'ownership' in the productivity of the organization."

Baney is in a unique position to make good his ideas: As head of an organization that sells computers and systems to other nonprofits, he can actually offer cash incentives. "Even my sales administrator and bookkeeper get commissions," he says.

In tight times, basics such as using seminars and training as perks when raises are not available can go a long way.

So can a simple thing such as letting IS staffers know you're on their side, says Don Gorsica, director of budgets, local-area networks and telecommunications at Planned Parenthood Federation of America in New York. "I care about my people and go to bat for them," he says. "I'll fight the political battles to try to get them what they need."

■ **Lesson 2: Consider becoming a technology follower.** This kind of caution may sound downright blasphemous to most IS managers, who have been conditioned to think that competitive advantage depends on having the latest and greatest technology.



**Red Cross' Drucker** *strives to show how IS efforts support the organization's overall mission*

However, nonprofit IS managers say taking a risk on new or untried technology can be deadly, particularly when times are tough.

"I would caution against always having to be on the cutting edge," Gorsica says. "When times are tight, it pays to go a little more cautiously."

For some companies, being a technology follower may not be as crazy as it sounds, agrees Bob Schmitt, director of the Public Interest Computer Association, an organization that helps public interest groups manage new information technologies. He notes that the Japanese have become experts at "waiting for other people to take chances" — with spectacular results.

Supporting this view are horror stories about what can happen when IS managers stick their necks out for new systems.

One classic tale tells of an organization that rushed to buy a large minicomputer network several years ago. After 18 months, the organization discovered that the system wasn't at all suited to its work. During that time, technology matured enough that a better network became available — at half the price.

In the end, the network, purchased for about $80,000, was sold at an auction for $5,000, Schmitt says.

Scale up these numbers for larger corporations, nonprofit IS managers say, and you are talking disasters potentially worth millions.

"We try to be on the leading edge but not on the bleeding edge," says Jerry Mirelli, vice president of information services at Cooperative for American Relief Everywhere, Inc. (CARE), the international relief and development agency based in New York.

Letting others take the pioneer's arrows doesn't mean condemning yourself to permanent second-rate status, Mirelli adds.

CARE recently installed a new LAN based on Novell, Inc.'s Netware 386 that will support 150 users by the end of summer. "We can now invest with a reasonably high expectation of return on investment," Mirelli says.

■ **Lesson 3: Computerize only high-payoff applications.** In many nonprofits, IS is much better integrated with organizational goals than it is in most for-profit enterprises. Plus, IS managers are continually reminded that their departments exist to further The Mission.

"We're very aware that we have to serve our revenue-producing areas," says Ed Mills, vice president of systems and operations at Unicef, the New York-based United Nations Children's Fund. An important result is that nonprofits tend to pick only high-payback projects.

The computerization of Unicef's fund-raising system is a good example. In the mid-1980s, direct mail revenue at Unicef's New York office rose by a modest 4% annually.

After careful study, Mills and others determined that computerizing the lists of names and addresses and giving histories of the 1.5 million people who donate or buy cards would yield very high paybacks. Mills then drafted a strategic systems plan that clearly tied the request for a new mainframe and fund-raising software to big fund-raising gains.

Unicef's management and executive committees signed off on the project, clearing the way for a $500,000 corporate grant from Digital Equipment Corp. for a DEC 6000 Model 310 with about 10G bytes of storage (at about half its retail price).

The careful targeting paid off: Coupled with improved procedures, direct mail revenue has risen 145% during the last five years, Mills says. The staff has also been trimmed, while volume has jumped 70%.

The message, IS nonprofit managers say, is that it pays to spend extra time deciding what to automate and what not to. As one manager put it: "A good filing cabinet system is still a reliable method of capturing and retaining data."

■ **Lesson 4: Don't get hung up on brand names.** Just as there's a time for Grey Poupon and a time for generic-brand mustard, knowing when to buy brand-name technology can be a big dollar stretcher, nonprofit IS managers say.

"Most of us don't have the resource base to purchase name-brand products," explains Gary Bass, executive director at OMB Watch, a Washington, D.C., agency dedicated to tracking issues related to the federal Office of Management and Budget. "We look kindly toward clones."

Although they are among the most conservative shoppers, many nonprofit IS managers don't go in for brand-name PCs and software.

Instead, systems from companies such as AST Research, Inc. in Irvine, Calif., Acer America Corp. in San Jose, Calif., and Advanced Logic Research, Inc., also in Irvine, are popular.

Whereas many for-profit companies settle on a brand name and then shop around for the best price, nonprofit IS managers generally seek out specific features, says Stephen Allen, president of Integrated Technology Systems Co., a consulting firm in New York with both nonprofit and for-profit clients.

For example, instead of looking for the cheapest IBM or Compaq Computer Corp. PC, the clients look for an inexpensive clone with an Intel 80386SX processor, 40M-byte hard drive and color IBM Video Graphics Array monitor, Allen says.

Moreover, the argument goes that in many cases, brand names simply aren't worth the extra money. IBM, Compaq and others charge a premium for their components, Allen says, and there's a fair body of independent testing that shows performance advantages may be nominal.

Thus, in many applications, "second-

# Nonprofits not so different from you

*"Our biggest stumbling block is a CEO who is totally ignorant of computer technology and its potential benefits."*

*"There are few unbiased sales or consulting people to talk to."*

*"Management sees a system upgrade as an expense, not an investment."*

*"Time for training is difficult to arrange."*

Those comments could be from any information systems manager in any commercial company on any day of the week. But surprise: They come from IS managers in a recent survey of *nonprofit* firms.

That's right. Health organizations. Religious groups. Arts and cultural organizations. Human services and social action groups. While many snobbishly view nonprofits as toy organizations, consultants and IS managers in those groups say the pressures facing them are every bit as intense as in other businesses — and sometimes greater.

"There is very much a bottom line in the nonprofit world," says Ed Mills, vice president of systems and operations at Unicef, the United Nations Children's Fund in New York.

For example, Mills says, the ratio of revenue to expense has to meet guidelines from the Better Business Bureau and the National Charities Information Bureau. Such agencies keep tabs on what percentage of a nonprofit's revenue goes to charity and what percentage goes to management and overhead, he explains.

Brian Kirk, manager of KMPG Peat Marwick's nonprofit consulting group, notes that nonprofits are also under pressure to make sure funds raised go directly to program support. This means overhead costs must be kept down.

Especially in matters of cost-justification, nonprofits very much resemble their for-profit counterparts.

"Most nonprofits very carefully weigh the cost benefits of computer systems," says Bob Schmitt, director of the Public Interest Computer Association, an organization that helps public interest groups manage new information technologies. "There have to be demonstrable benefits."

According to a survey of 451 organizations conducted by Peat Marwick and *The Chronicle of Philanthropy*, a trade newspaper, the top computer problems facing nonprofits include high costs, inappropriate software and lack of training.

In addition, respondents said, many problems were caused by differences with chief executives unfamiliar with technology as well as by a lack of money, staff time and training.

According to the survey, educational institutions on the average spend more each year ($170,000) on technology than any other nonprofit organization, followed by hospitals and health organizations ($130,000), foundations ($65,000), religious groups ($24,000), arts and cultural organizations ($23,000), human services groups ($18,000) and social action groups ($1,700).

LUCIE JUNEAU AND JOSEPH MAGLITTA

tier clones" are plenty good. (It's important to note, IS managers caution, that these aren't the garage-assembled, off-brand models found in the back of some computer magazines but rather the reputable products of established vendors.)

It may be worth looking at different buying channels, too. IS managers say smaller user departments in particular can benefit from direct buying channels.

Some nonprofits buy equipment through mail-order services because they get better deals, says Ellen Rinehart, computer project coordinator at The Public Interest Clearinghouse. The San Francisco-based center supports organizations that provide legal services to the poor.

Rinehart says that although many PC vendors warn potential customers against buying from mail-order houses because they can't provide service, that's not necessarily a good reason to avoid buying by mail. It isn't difficult to find vendors willing to service computers purchased from other vendors, she notes.

Of course, mail-order shoppers must be willing to gamble with potential incompatibility problems, Allen adds.

■ **Lesson 5: Consider bargain software.** As in hardware, the emphasis here is on performance, not designer labels. To this end, Allen says, some nonprofits are switching to lesser known spreadsheets.

For example, Allen says that in his opinion, Borland International, Inc.'s Quattro Pro offers more features than Lotus Development Corp.'s 1-2-3, and he says it sells on special promotions for less than $100. "You couldn't buy Lotus near that price."

Also popular is shareware or public domain software, says Randy Dunagan, program director at Compumentor, a 4-year-old nonprofit that matches volunteer computer experts with San Francisco-area nonprofits. Popular shareware packages include Buttonware, Inc.'s PC File, a desk accessories package, and Claris Corp.'s Public Folder, a package that allows Apple Computer, Inc. Macintosh users to share files, Dunagan says. Cheap or free software is available from network libraries on compact disc/read-only memory disc and by mail.

Compumentor is currently developing a shareware donor database that is slated to be available by the end of August.

While power users may demand more, low-cost, virus-checked software can be a real boon for many end-user departments, nonprofit managers say.

To minimize postpurchase costs, many nonprofits refuse to buy products from vendors that don't offer toll-free numbers for support calls.

■ **Lesson 6: Make end users do as much as possible.** Long shackled by skeleton IS staffs, nonprofits have adapted by offloading as many functions as possible to non-IS personnel.

While the idea of giving maximum computing power to users is certainly not new to IS, what differentiates many nonprofits is their absolute commitment to decentralization — often out of sheer necessity.

"We can't have the computer guru in 10 places at the same time," Bass says. "It's computer Darwinism: You either adapt, or you die."

Superuser programs work best in newly computerized departments that lack long-standing IS traditions, Kirk and others point out.

Some nonprofits are taking the idea a step further and hiring IS coordinators for end-user departments in hopes of reducing dependence on central IS.

At the Peace Corps' headquarters in Washington, D.C., seven microcomputer technicians support 500 staff members. "It's very difficult to give them all the support they need," says Steve Rose, director of communications and office automation services, "so we rely on [users] to learn more themselves."

Divisional IS coordinators are often selected from the region's staff. Duties vary from region to region, according to local needs.

In one region, the IS coordinator is developing custom applications. In another, the coordinator provides technical support. In a third, the coordinator travels from one Peace Corps post to another, helping the staffs use their IS resources effectively.

Besides improving relations with user departments, the new arrangement also brings exactly the right knowledge closer to users. "Each of the [three] specialists knows as much, if not more, about their staff's own needs than we possibly could," Rose says.

■ **Lesson 7: Simplify training.** Nonprofits are also reducing the load on their IS staffs by using low-maintenance training methods.

For example, the Red Cross recently decided not to tie up precious IS personnel to educate volunteer staffers at about 250 local chapters on a new PC-based office automation system.

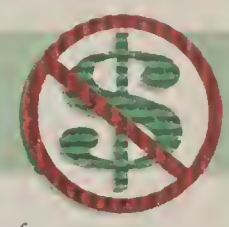
Instead, training is done via videos, workbooks and computer-based methods. Besides freeing IS personnel, Drucker says, such tools are also more convenient for volunteers who can't disrupt their schedules to attend face-to-face training sessions.

Indeed, in many nonprofits, the rule is to use precious IS time for training only when absolutely necessary.

In a recent survey of 451 nonprofits by Peat Marwick and the *Chronicle of Philanthropy*, a trade newspaper, some 78% of respondents said they used hardware and software documentation as the main method of training users to use and manage information technology. Self-study courses were used by 36% of the respondents.

Often, many training decisions are involuntary, dictated by a lack of resources. "The price of classes is too high, and time is a big factor," especially for volunteers, according to the director of an educational foundation. Thus, self-instruction becomes the most viable alternative. •

### Other lessons from the nonprofits



*Management guru Peter Drucker says that businesses everywhere can learn several key lessons from nonprofit organizations*

- **Define and communicate mission clearly**
  Focus on specific objectives that have clear-cut implications for actions by workers. The best organizations start with the mission rather than with their own rewards.
- **Seek ideas from all corners**
  Innovation should be encouraged in every corner of the organization.
- **Use boards and directors**
  Effectiveness comes from helping to organize the work of overseeing committees and measuring their performance.
- **Set concrete goals**
  All employees should be measured against yearly goals, and nonperformers should be removed.
- **Level the hierarchy**
  Workers need to be sincerely convinced that every job in the organization is vital.

CW Chart: Doreen St. John

# CARE's technology vigil will soon be at an end

As a vice president at Cooperative for American Relief Everywhere, Inc. (CARE), the international relief and development agency, Jerry Mirelli knows all too well what it's like to need and not have.

Mirelli, CARE's vice president of information services, had realized for some time that a local-area network could greatly boost worker efficiency at the agency's New York headquarters. But like many nonprofits, CARE couldn't risk spending money on technology that was not tried and true.

"We have to put in new technology as soon as possible after it's been proven viable," he explains. "But we can't be the ones who prove it viable because we don't have the resources."

By the end of this summer, CARE's waiting will end. Installation of a new Novell, Inc. Netware 386 LAN will be completed then, letting CARE headquarters employees share files, send electronic mail, dial up on-line bulletin boards and compose group documents.

Since the project began about one year ago, some 60 LAN nodes have been installed, Mirelli says. A total of 150 will be up and running by September, he says, adding that the LAN leverages CARE's investment in its existing IBM AT and Personal System/2 computers.

"A couple of years ago, groupware applications weren't available," Mirelli explains. "Now, the technology has reached the crossover point between cost and function so that it's worth our while to spend the money for the amount of functionality we get."

Santha Faiia

**CARE officials** *say the efforts of its 7,000 field workers will be better supported by a new Novell Netware 386 LAN*

Funding for the $100,000 system comes from CARE's $2.1 million annual IS budget — huge by nonprofit standards. Of that amount, some $600,000 goes to overseas IS. Overall, CARE's budget is nearly $154 million, plus donated agricultural commodities.

In addition to the new LAN, CARE's headquarters boasts an IBM 4361 mainframe. An IS staff of 19 at the New York office manages all the communications, technology and office automation needs of the organization, including everything from the private branch exchange system and worldwide E-mail service to the office's photocopy machines, Mirelli says.

The New York staff also provides CARE's overseas missions with standard applications and guidance and sets hardware and software standards. "As is true in many nonprofits, we wear many hats," says Mirelli, who establishes the overall technology direction for the organization.

CARE employs about 250 people in the U.S. and another 250 overseas. The overseas personnel hire local nationals to run the agency's missions. Worldwide, CARE workers total about 7,000 in approximately 40 countries.

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*for serious readers*

# 1991 Editorial Calendar
## (July-December)

| Product Spotlights/Buyers' Scorecards | Issue Date | Ad Closings | |
|---|---|---|---|
| | | Color | B/W |
| PC Presentation Graphics Software | July 8 | June 21 | June 28 |
| Executive Information Systems *(Featuring Buyers' Scorecard)* | July 22 | July 5 | July 12 |
| Storage Systems *(Featuring Buyers' Scorecard)* | Aug. 19 | Aug. 2 | Aug. 9 |
| PC Spreadsheets | Sept. 2 | Aug. 16 | Aug. 23 |
| Imaging Systems *(Featuring Buyers' Scorecard)* | Sept. 16 | Aug. 30 | Sept. 6 |
| TCP/IP | Oct. 7 | Sept. 20 | Sept. 27 |
| PCs and Workstations *(Featuring Buyers' Scorecard)* | Oct. 21 | Oct. 4 | Oct. 11 |
| Distributed DBMS | Nov. 4 | Oct. 18 | Oct. 25 |
| Mainframes *(Featuring Buyers' Scorecard)* | Nov. 18 | Nov. 1 | Nov. 8 |
| LAN Operating Systems and Applications *(Featuring Buyers' Scorecard)* | Dec. 2 | Nov. 15 | Nov. 22 |
| Client/Server Application Development | Dec. 16 | Nov. 20 | Dec. 6 |

Editorial Contacts: **Mary Brandel (Spotlights)** (508) 879-0700 ext. 175 **Michael Sullivan-Trainor (Buyers' Scorecards)** ext. 229

| Integration Strategies | Issue Date | Ad Closings | |
|---|---|---|---|
| | | Color | B/W |
| Integrating New Technologies | Aug. 12 | July 26 | Aug. 2 |
| Integrating Manufacturing Systems | Oct. 28 | Oct. 11 | Oct. 18 |
| Working with Commercial Systems Integrators | Dec. 9 | Nov. 22 | Nov. 27 |

Editorial Contact: **Joe Maglitta** (508) 879-0700 ext. 192

| Industry Closeups | Issue Date | Ad Closings | |
|---|---|---|---|
| | | Color | B/W |
| Industry Closeup: Information Systems in State and Local Government | Aug. 12 | July 26 | Aug. 2 |
| Industry Closeup: Information Systems in Pollution Control | Oct. 28 | Oct. 11 | Oct. 18 |
| Industry Closeup: Information Systems in Media | Dec. 9 | Nov. 22 | Nov. 27 |

Editorial Contact: **Lory Zottola** (508) 879-0700 ext. 236

| Special Reports | Issue Date | Ad Closing |
|---|---|---|
| Special Report: 10th Anniversary of the IBM PC | Aug. 5 | July 19 |
| Special Report: Annual Salary Survey | Sept. 2 | Aug. 16 |
| Special Report: Annual Job Satisfaction Survey | Sept. 9 | Aug. 23 |
| Special Supplement: Premier 100 magazine | Sept. 30 | Aug. 16 |
| Special Edition: Forecast '92 | Dec. 30 | Dec. 6 |

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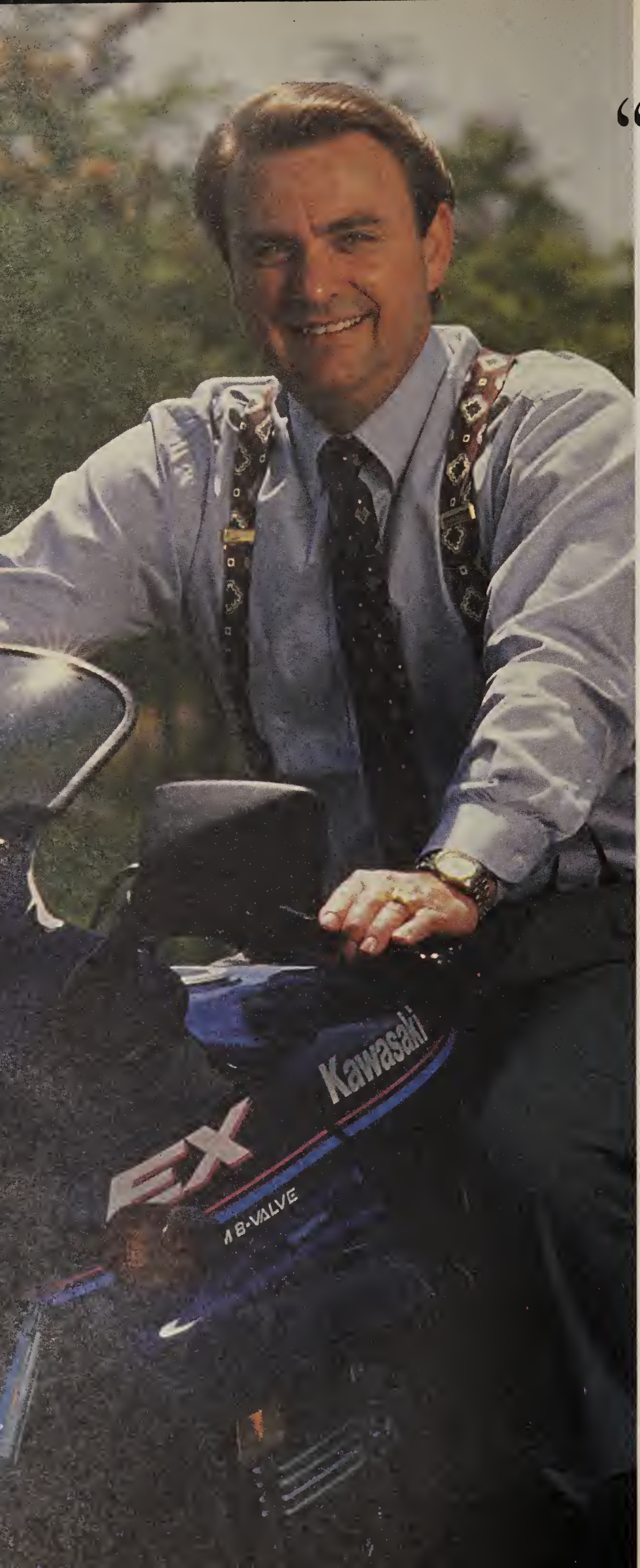


# "I use Computerworld as a barometer...to tell me when a product or technology is becoming a viable tool."

Roger A. Peterson
Director of Information Systems
Kawasaki Motors Corporation

"I can't remember when I didn't read *Computerworld.* It's been at least ten years now.

"It's the one place I can go every week to find out the most current information on technologies or applications that Kawasaki might want to pursue...like relational databases, E-Mail, and that sort of thing.

"It gives me a reading on what real people are doing out there...so I know if I'm onto something that's leading edge and that has proven business applications.

"When I get *Computerworld*, I don't just let it sit. I open it up and scan the table of contents to quickly find the articles I want to read. And sometimes I'll flag a story I know somebody else on the staff will be interested in, attach a little post-it note, and send it on.

"I think *Computerworld* is one of the more recognized industry magazines, which means that it automatically draws from a more qualified base of writers and analysts. They've got quality and depth in the entire breadth of areas they cover...from PC to mainframe. It's well written, it's authoritative, and it offers a considerable degree of technical knowledge.

"I would say that anybody who's managing technology simply has to have his or her own copy. It's the best way to stay on top of what's new and what's breaking in the industry. That's why I'm first on our routing list!"

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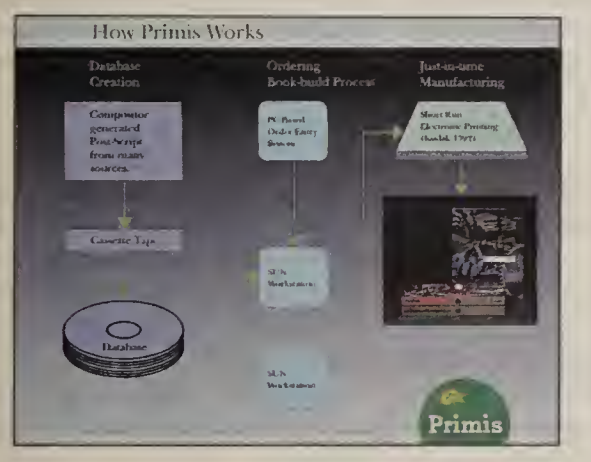
# High-tech heroes II

*The* Computerworld *Smithsonian Awards honor those companies whose applications improve the world in which we live. What follows are 10 examples of outstanding nominated systems.*

**Business and Related Services**

*McGraw-Hill, Inc.*

If you recall buying a college textbook you barely used or scouring the library for an assigned article, you will appreciate McGraw-Hill, Inc.'s Primis. The fledgling electronic publishing operation allows instructors to order customized course ma-




terials printed on demand.

Since 1990, Primis has delivered printed and bound 8½- by 11-in. "books" containing McGraw-Hill and other publishers' materials drawn from a 4G-byte Adobe Systems, Inc. Postscript database. The customer selects which chapters of a text to include, delete or reorder. In this way, professors can keep materials current with changing curricula.

Educators say Primis custom texts are more applicable to their courses, provide a broader scope of available material and can potentially save students time and money.

"It greatly enhances the flexibility I have in developing and assigning material in the course," says Robert Meigs, an accounting professor at San Diego State University, one of more than 75 schools using Primis services.

Without Primis, Meigs says, it would be impractical economically and logistically to assign course material derived from various publications.

For example, a compilation of 10 chapters from two different texts would cost a student $15 as opposed to as much as $80 for the two full textbooks.

Primis became feasible with the advent of high-speed Postscript printing, enabling quick turnarounds. Primis uses an Eastman Kodak Co. Ektaprint 1392 Model 24 printing at 92 page/min. The database and software, developed by Kodak for McGraw-Hill, run on a Unix-based Sun Microsystems, Inc. Sparc 4/390 workstation.

The system has some limitations. So far, the database contains a few text titles in political science and marketing, accounting, mathematics, plus journals and supplements.

The system cannot yet handle color and halftone photographs, and it is also unclear whether intellectual property right concerns will hamper author participation. — *Rick Pastore*

**Environment, Energy and Agriculture**

*The Island Institute*

A third-grade student stares intently at an image of her neighborhood on a computer screen. She nudges her friend and says, "Hey, pixel 25 is my house!"

An ecologist in another town studies images of Maine's southern coast, analyzing loss of the region's wetlands.

Both are viewing satellite images on an Apple Computer, Inc. Macintosh using Geographic Access Information and Analysis (GAIA) software. Utilizing a user-friendly graphical interface, GAIA lets ecologists, researchers and educators display and manipulate digital satellite data.

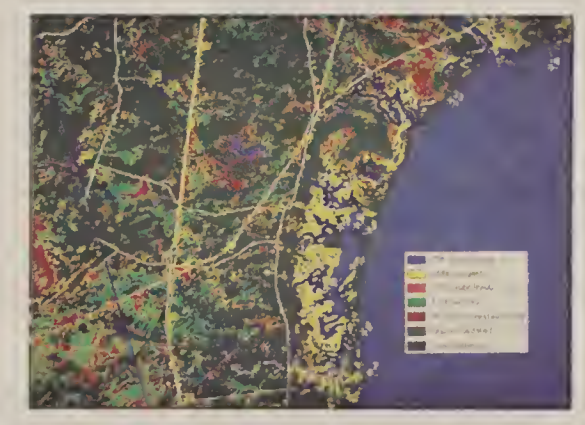
GAIA was developed by the Island Institute in Rockland, Maine, a nonprofit group that monitors Maine's 3,000 islands.

The program uses digital data distributed by U.S. and French commercial satellite image services. Between 1,000 and 10 million acres can be studied by GAIA users tracking such things as urban growth, deforestation and destruction of wetlands anywhere in the world.

Users can magnify images and manipulate them by assigning colors to represent different land conditions and by superimposing vector drawings to display features such as geopolitical boundaries and watersheds.

Until now, digital satellite data was accessible only to ivory-tower researchers using mainframes or minicomputers running costly, complex programs, according to Philip W. Conkling, executive director at the Island Institute. "GAIA brings remotely sensed data to mere mortals," he says.

So far, the research community is enthusiastic. "GAIA is the first program that doesn't require years of training just to understand how to manipulate and analyze the data," says Janet Campbell, director of remote-sensing image analysis at the Bigelow Laboratory for Ocean Sciences in West Boothbay Harbor, Maine. Campbell convinced Apple to donate Macintoshes to six Maine schools so they could



use GAIA to boost students' awareness of their environment.

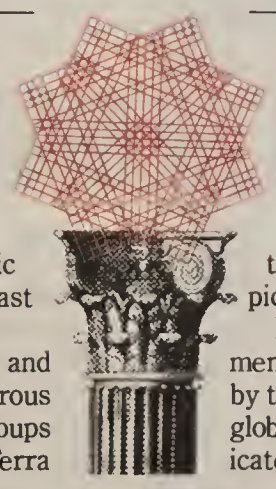
GAIA software costs about $500 for nonprofit groups and $1,500 for commercial customers. — *Susan Nykamp*

**Education and Academia**

*University of Texas at Arlington*

As the old saw goes, it's love that makes the world go 'round. But for Christopher Scotese, a Macintosh does a much better job of putting a topspin on his globe.

Scotese's Terra Mobilis ("moving earth"), software for the Apple Computer, Inc. Macintosh, demonstrates the movements and evolutions of the Earth's tectonic plates during the past 600 million years.



Used as a teaching and research tool by numerous universities and groups around the country, Terra Mobilis uses moving models and maps to illustrate the mobile nature of the earth — something impossible to do with traditional maps and pictures.

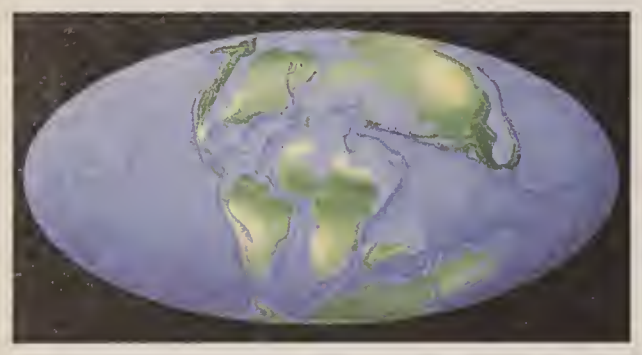
Its continued development is being sponsored by the Paleomap Project, a global research group dedicated to assembling a digital atlas that will describe geological, climatic and oceanographic evolutions as well as the evolution of the Earth's plate movements.

Terra Mobilis sprang from Scotese's undergraduate days in the early 1970s at the University of Illinois in Chicago. He says he first got the idea by watching some friends play a lunar-lander game on the Plato system, an

*Continued on page 58*

*Continued from page 57*

interactive teaching tool popular at the time. "I figured if someone can do that with a lunar lander, maybe I can write a



program to move continents around."

The program evolved into several versions, from a mainframe-based black-and-white version to today's fully shaded, three-dimensional color version. It did not land on the Macintosh until about 1986, when Scotese was doing postdoctoral work at the University of Texas at Austin.

Co-author Charles Denham saw what Scotese was doing on mainframes and suggested that the program could be done on the Macintosh. "Six months later, he came back with a prototype of the program," Scotese says.

According to Scotese, who is currently at the University of Texas at Arlington, Terra Mobilis is now in prototype form for Unix machines.

He adds that one of the hardest things about the project has been keeping up with the technology. "It's been a struggle, especially since the development has been done on a part-time basis." — *Carol Hildebrand*

## Finance, Insurance and Real Estate

*Niagara Fire Insurance Co./ Continental Canada Insurance*

In 1986, Continental Canada Insurance, a unit of New York-based Continental Corp., considered folding its personal insurance brokerage division because of weak profitability. But a break from its largely manual methods of information processing yielded a company with 55%

less overhead, 30% higher profits and underwriters who handle six to 10 times the industry average amount of insurance.

Continental Canada, an IBM mainframe and dumb terminal shop whose agents rarely used computers, created a new division, Niagara Fire Insurance Co., and a processing platform built on Sun Microsystems, Inc. workstations. It also brought an expert system on board, which gave line supervisors far greater power.

"We had nothing to lose," says Henry Rodrigues, senior vice president of information services at Continental Canada. "Our business was not very profitable. We needed to approach it in a different way or abandon it."

Over a two-year period and with a $1 million investment, Niagara Fire radically streamlined its operation, cutting the number of agents from 750 to 150 and support staff from 140 to 30. The 150 remaining agents had systems installed in their offices and now do much of the information processing once done on paper and sent to support staff.

Each of Niagara Fire's 11 underwriters has a Sun workstation on his desk. Instead of a slow turnaround time on policies and performance, each underwriter reviews new policies on a daily basis, uploading agents' information every day.

The underwriters use the expert system to apply a variety of underwriting rules to policies, determining which of them will not be profitable. The underwriters then coach brokers on how to perform more effectively for corporate as well as individual profitability. Before, underwriters were not empowered to do so. — *Michael Fitzgerald*

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## Government and Nonprofit Organizations

*State of Arkansas Department of Health*

Every month, the Arkansas Department of Health supplements the diets of more than 60,000 women and children. That's a lot of food — and paperwork — for the Women, Infants and Children (WIC) Supplemental Food Program to handle.

What used to take up to two months' processing time now takes minutes, thanks to an application developed by Bert Wells, director of data processing at the Bureau of Administrative Support. The project, which began in 1989, has been fully implemented at all 111 WIC clinics in the state, Wells says.

Wells connected scattered local health offices to the central office using applications software that runs in either a single or networked CPU environment.

Prior to automation, WIC health professionals manually took down the applicant's name, address and nutritional requirements, mailed the data to the central Health Department offices in Little Rock, Ark., and waited for information to be mailed back to determine the applicant's eligibility and nutritional requirements, administrative assistant Ruth Woods says.

Employees in Little Rock manually matched an applicant's demographic information to nutrition packages designed for five classifications, ranging from pregnant women to 5-year-olds. The WIC employee then wrote food vouchers for the client. It took two months sometimes for Little Rock to process the information and authorize vouchers, Woods says.

The process now takes less than five minutes. The WIC health professionals enter the applicant's data into Wang Laboratories, Inc. workstations, from which the data is transmitted to a central Wang VS 7310 and VS 10100 database in Little Rock.

The computer then matches the data to existing information on the nutritional needs of the specific categories, and within minutes, the system prints out voucher packages tailored to either the child or the pregnant or breast-feeding mother.

"It's the grandest thing since cars not to have to handwrite everything," Woods says. — *Kelly E. Dwyer*

## Manufacturing

*USS Service Center*

In 1987, Pittsburgh-based steel maker USS Service Center had a lot of plants with their own computing systems, preferred software packages and methods of doing things. It also had competition from all sides — lower margin foreign steel producers and small specialty "minimills" in the U.S.

"We realized we had to find a better way," says Norbert Connors, USS' comptroller.

At USS, a better way meant a switch in information systems strategy that Connors initiated in 1987.

"It didn't make sense to be solving the same problem five or six different ways," Connors explains.

Within three years, USS had settled on one platform and had sought out and employed the best components of the various old systems on an enterprisewide basis. In the process, the company realized $12 million in savings in staffing and processing costs.

The platform the company chose was two IBM 3090 mainframes supported by an Enterprise System/9000. Dumb terminals were replaced by workstations connected over local-area networks.

Once the hardware transition was complete, core business applications in the plant and financial areas were streamlined and applied across all of the company's plants.

"We aimed for the highest common de-

nominator," Connors explains. "If everyone saw that one plant's particular enhancements worked, we included them in the implementation."

The result is a cohesive IS outlook that provides USS with a basis for continued competitiveness and improvement, Connors says. — *Donald St. John*

## Media, Arts and Entertainment

*11th Asian Games*

Although traditionally shy about attracting international media exposure, the Chinese government last fall put together a massive sports information network for the 11th Asian Games in Beijing. The network handled media links and supplied information to media outlets.

Beijing Information Processing Co. was the software development firm hired by the city of Beijing to design and implement the Asian Games Computer System for the sporting event, which is exceeded in size only by the Olympics.

The system brought East and West together: It used Western-made mainframes and more than 700 Chinese personal computers linked by leased lines.

By opting for a distributed system, the Asian Games broke away for the first time from the centralized sports information systems model normally used for international sporting events. Instead of running databases and applications software on central mainframes with dumb terminals handling data and display, PCs acted as intelligent workstations, lessening the

processing load for central computers and increasing response time.

"It was our first time using a distributed client/server design for electronic information service in such a large sporting event," says Jizhong Wang, deputy chief commander of the Asian Games. "The design provided a good reponse time, and the PCs were the perfect user interface."

During the two weeks of the games, Stratus Computer, Inc.'s XA 2000 Continuous Processing Systems running Beijing Information Processing's Results Information System collected competition results from PCs. These machines were located at stadiums, tracks, swimming pools and other event sites around the city.

Game information was entered into the PCs by Asian Games' staff members and electronic recording devices and sent to the mainframe to be sorted and stored. From there, information could be accessed via PCs within the complex by spectators, staff members and athletes in Chinese and English. Users could also call up athlete biographies and tourist information. For the media, local and international news services also received game results through a leased-line connection to the Xinhua News Agency in China.

According to Wang, the Asian Games Computer System exceeded its goals and increased confidence in Asia: "It is the first time for our country and company to host a project of this size, and we were pleased with the results." — *Jodie Naze*

## Medicine

*Techmedica, Inc.*

Techmedica, Inc. is a firm that created an entire industry niche with information technology and improved life for thousands of people in the process.

The Camarillo, Calif., company designs and manufactures customized surgical implants — artificial bones and joints for patients whose special needs make off-the-shelf implants impractical. Founded in 1981, Techmedica has integrated both packaged and in-house-developed computer-aided design (CAD) and manufacturing software running on Sun Microsystems, Inc. Unix workstations to produce more than 10,000 custom implants.

"The analogy we like to use is, would you ever buy a pair of dentures off the shelf? Of course you wouldn't," says Chuck Woznick, Techmedica's vice president of operations.

Techmedica's CAD process depends on highly sophisticated medical imaging technology, such as computer-aided tomography, or CAT scanning, and bone-structure modeling. Techmedica software translates medical images into a precise design drawing. After consultation among physicians and medical engineers, the design code is sent to Techmedica's machine tools to manufacture the custom-fitted device.

According to Woznick, Techmedica has reduced the design time for a custom implant from 200 man-hours to one or two man-hours. Such speed can make a huge difference. "In the past, a cancerous tumor diagnosed on the bone might have required amputation," Woznick says. "If we can produce the necessary device in two or three days, we can save that person's ability to walk."

Techmedica implants have even saved lives. In one case, an infant afflicted with a rare congenital defect was born without a rib cage. Techmedica designed artificial ribs, which will expand as the child grows.

Techmedica's products are not limited to humans. When an endangered snow leopard in a zoo in Calgary, Alberta, could not mate because of failing hip joints, Techmedica designed artificial hips. The zoo "ended up with six leopard cubs," Woznick says. — *Clinton Wilder*

## Transportation

*Siemens Automotive*

"Twenty years from now," says Jim Haugen, an intelligent-vehicle highway systems consultant, "we're all going to be driving cars equipped with these systems and saying, 'How did I ever get along without it?' "

"It" is Ali-Scout, a real-time interactive traffic management/route guidance/driver information system developed by Siemens Automotive.

Ten years in the making, the system networks miniature, microprocessor-based handheld "in-vehicle units" with strategically placed infrared, computerized roadside beacons and a central traffic control computer.

The result is a computer system that can tell drivers where to go and how to get to their destination in the quickest, safest, most fuel-efficient way. Moreover, drivers can constantly update the data bank with on-the-spot road information.

Ali-Scout's public benefit potential is great. The Siemens Automotive system enables vehicles bearing toxic loads to bypass red-flag situations such as densely populated areas, school districts and precarious driving stretches. In addition, according to federal research, Ali-Scout could save some 11,000 lives per year by cutting down on congestion- and speed-related accidents.

Furthermore, less congestion on the roads means less pollution in the air, says Ronald Knockeart, Siemens Automotive's central technology vice president.

According to a recent Federal Highway Administration study, moderate implementation of Ali-Scout could reduce tailpipe exhaust pollution by 8% to 15% by 1995. It could also cleanse the air of some 270,000 tons of harmful chemicals over a 20-year period, the company estimates.

The fuel savings alone, Haugen notes, would make the approximately $500-per-vehicle Ali-Scout system a bargain. The Federal Highway Administration study found that traffic congestion in the U.S. leads to the waste of some 2 billion gallons of gasoline per year, and that figure is expected to increase to more than 11 billion gallons annually by the year 2000.

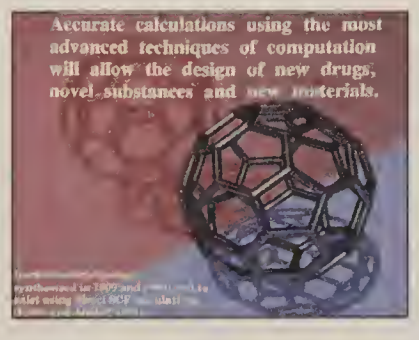
If Ali-Scout were used in 15% of the nation's vehicles by 1995, the study reports, it would save 50% of the current waste amount.

So far, only one downside of the system has emerged: In Berlin, Haugen says, Ali-Scout beta-test drivers reported anxiety attacks when they were asked to surrender their systems at the test's conclusion. — *Nell Margolis*

## Science

*Project Center for Supercomputing*

Ordinary soot contains a just-discovered molecule that scientists say may be able to conduct electricity at room temperature without resistance — and therefore, without creating heat.




Right now, material can only move currents and keep cool at absolute zero. Think of the possibilities: high-speed, magnetically powered trains and computers that don't need cooling systems.

The discovery last year of this six-atom, soccer ball-shaped carbon molecule, known as soccerbalene, would not have been possible without Jan Almlof and Hans Luthi, researchers at the Project Center for Supercomputing in Zurich who devised a faster, cheaper, more CPU-efficient way to solve big calculations.

This method of calculation — direct self-consistent optimization, or Disco — could help researchers further explore such disciplines as medicine, astrophysics and manufacturing, according to Almlof.

Traditionally, supercomputers worked near-gigabyte-size math problems by crunching numbers in a certain order, saving parts of the calculation for later use. Because supercomputers had to stop and fetch temporarily stored data, the old method caused I/O bottlenecks that crippled the process, Almlof says.

The method was slow and expensive, enabling the study of molecules with only 10 atoms or fewer. This limitation ruled out most liquids and solids.

Disco prevents tie-ups by calculating data as needed instead of saving and recycling it. Even though it repeats work it may have already done, this computer algorithm saves expensive computing time by using all the processors on as many networked supercomputers as possible. The old way used only some of the CPUs of a single machine.

"A calculation that would normally have taken several days on a single supercomputer can now be started and finished while we're at lunch," Almlof says.

Perfected over 10 years on a network of seven Cray Research, Inc. supercomputers in Europe and the U.S., Disco can shed light on various disciplines, Almlof says, because it can do computations of gigabyte and even terabyte size.

Pharmaceutical firms, for instance, will be able to model and assess the effects of new medicines that now exist only in theory. — *Kim S. Nash*

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NATIONAL
# BRIEFS

## Lowering the boom

▶ **Digital Equipment Corp.** late last month lowered the legal boom on Anaheim, Calif.-based **Micro Technology, Inc.** (MTI) with a lawsuit alleging that MTI is infringing on four DEC patents for storage interconnect technology. DEC wants the third-party peripherals vendor to agree to stop using its patented technology by December 1992 and to pay fees to DEC during the phaseout period. An MTI spokesman denied DEC's claims and said his company will "pursue every legal avenue available."

## Can't touch this

▶ **Computer Associates International, Inc.** is taking Independence Day personally this year. By the time the flags are raised on the Fourth of July, the Garden City, N.J.-based software player's stockholders will have received new rights under a recently adopted shareholders' rights plan aimed at deterring unwanted takeover attempts. No such attempt is currently in the works, according to the company, and CA, long regarded as one of the computer industry's aggressive acquisitors, apparently intends to stick to that side of the takeover equation.

## Slow but steady

▶ **Hitachi Data Systems, Inc.** (HDS), which called itself the "billion-dollar start-up" at its birth in May 1989, is growing at a slow, but determined pace, according to Chief Executive Officer Gary B. Moore. With revenue at about $1.2 billion for the fiscal year ended May 1, the IBM-compatible mainframe vendor should hit the $1.5 billion mark in 1991, Moore said. But the supply of HDS mainframes will be limited by factory capacity at parent firm Hitachi Ltd.'s Kanagawa, Japan, plant, Moore said.

## New kid on the block

▶ **Syscon Corp.**, a systems engineering and software development subsidiary of Harnischfeger Industries, Inc., has become the 12th member of the Software Productivity Consortium, based in Herndon, Va. The consortium, consisting of defense, electronics and aerospace companies, develops advanced software engineering methods for its members' use in building large, mission-critical systems.

# Vendors step up recycling efforts

BY J. A. SAVAGE
CW STAFF

In this era of sluggish sales, reduced profit margins and cutthroat competition, there are few things vendors can do to increase profitability. They can look to cutting the work force, they can figure on streamlining manufacturing and distribution or, like Sun Microsystems, Inc., they can look in the trash bin.

Conservation efforts might give consumers a warmer, fuzzier feeling about their vendors, but doing the right thing when it comes to the environment is worth more than just positive public relations: Vendors are saving decent money.

"In recycling from the manufacturing end, we made $7.5 million for Sun the last two years," said Leonard Murray, corporate manager of the company's investment recovery department. In manufacturing, old computers are taken apart and sold for their precious metals. Sun also posts a corporatewide reuse listing so if a piece of furniture or equipment is no longer needed in one part of the company, it can be transferred to another area where it will be useful. This saves on buying new equipment for the 8,500-employee Silicon Valley site.

### The drive is on

Sun recently announced an office recycling drive, in the course of which everything from soda cans to shredded paper will be recycled.

"Janitors will separate [throwaways] into two waste streams: wet, like food scraps that go to the landfill, and recyclable, which is sold on the secondary market," Murray said.

In the first month of the new program, Sun cut by 50% its trash headed for the landfill. The company said it expects to save approximately $115,000 per year in hauling costs at its headquarters site alone, according to Ken Prosser, West Bay facilities supervisor. Start-up costs — for bins and brochures — were estimated at $20,500.

IBM's 10,700-employee site in San Jose, Calif., is also focusing on energy conservation to save money — about $15 million in the last eight years. "This year we're getting serious about it," a spokesman said. "We figured if we hold 1991 energy levels down to 1990 levels, that alone would save millions." The company is attempting to accomplish this goal through employee education and more efficient lighting and use of space.

While some vendors with recycling programs have expressly targeted the bottom line in conservation programs, others were drawn into environmental protection through employee initiatives and are just beginning to realize a cost savings.

Bins for white paper, boxes for soda cans and stacks of newspaper line the hallways of Hewlett-Packard Co.'s Fort Collins, Colo., manufacturing facility. A visitor in search of a cup of coffee can get it — but not in a paper cup, much less one made of Styrofoam.

The thirsty guest must produce a mug or borrow one. Restrooms at the HP plant feature toilet paper made from recycled material; at the copy machines, reams of recycled paper are collated and stapled.

### Success is found

Approximately one year into the office recycling project, HP's Fort Collins resources recovery coordinator Mike Greenfield (a/k/a "Michael Recycle"), said employees have kept 372,220 pounds of fiber from being sent to the dump.

The company collects three kinds of fiber — white paper, cardboard and other office paper. Additionally, employees have reduced coffee-cup consumption by 60%.

This translates into great savings, Greenfield said. However, as a result of inexpensive hauling prices available in Colorado, hauling costs account for much less than in the Silicon Valley.

Storage Technology Corp. in Louisville, Colo., does some

*Continued on page 62*

## Doing well by doing good

*Several major computer companies are discovering that top environmental quality can show up on the bottom line. Don't believe it? Just ask Michael Recycle.*

- Sun Microsystems, Inc. made $7.5 million over the past two years by reselling old computer parts instead of sending them to the dump.
- Sun has also cut its landfill contributions by 50% — a move that aids the environment and will save the firm an estimated $115,000 per year in hauling costs alone.
- IBM has saved approximately $15 million over the past eight years through energy conservation: "This year," a firm spokesman said, "we're getting serious about it."
- Hewlett-Packard Co.'s Fort Collins, Colo., plant boasts 60% reduced coffee-cup consumption, 372,220 pounds of fiber saved from the dump by judicious recycling and a resources recovery coordinator nicknamed "Michael Recycle."

CW Chart: Tom Monahan

# Wang's UK moves surprise observers

BY RON CONDON
IDG NEWS SERVICE

LONDON — To perhaps an even greater extent than it did in the U.S., Wang Laboratories, Inc.'s decision late last month to become a distributor of IBM machines in exchange for investment capital took European users — and Wang's UK managing director — by surprise.

Wang's head man in the UK, Alan Davis, has suddenly left the company, and Ken Olesa, the firm's European vice president, is taking the reins until a replacement is found.

"Obviously, the company has been in trouble for some time. But we found this a very surprising route for the company to take," said Steve Primarolo, president of the 600-member UK Wang Users Group.

Primarolo said he was unsure at this stage how much of the Wang product policy would be retained. "Office 2000 is a set of procedures and practices rather than products, so that may hold," he said, referring to Wang's recently stated strategy for moving into the open systems market.

"And Wang Office is itself being ported to Unix anyway, so that is moving toward open systems," Primarolo added.

He said the key decision for Wang will be whether to go ahead with its new top-end VS system, code-named Mercury.

"It's a tremendous machine with a lot of poke," he said. "If they go ahead and launch it, then it will add three to five years to the life of the VS range."

Primarolo said there would be "a gradual drift away, rather than a sudden panic." But if Wang cans the Mercury system, he predicted, the exodus from the Wang world would be much faster.

Meanwhile, in Oslo, spokesmen for GPI, Wang's Norwegian distributor, and the Wang User Society in Norway reported that both groups are cautiously optimistic about the consequences of the announced alliance between IBM and Wang.

GPI President Elizabeth Dokka Holthe said that because the deal is a strategic one, it would give Wang's Norwegian users access to a greater number of applications and expanded choices of computer equipment. IBM Norway confirmed that its president, Roar Hoel, has been in contact with GPI and has set a date to work out details about future cooperation in Norway.

Wang User Society Chairman Helge Moe-Gumo, who is also the chief information officer at Norway's Bergersen A/S, said it was too early to evaluate the benefits Wang users reap from the announced agreement between Wang and IBM.

"One thing is certain: All computer vendors have formidable problems," Moe-Gumo noted. "It's positive that Wang, which has massive losses, seeks cooperation with the world's biggest computer vendor." However, only time will tell whether Wang users will get any direct benefit from the cooperation, he added.

"We shall wait and see," said Moe-Gumo, adding that he hoped the announced agreement would benefit all parties.

Computerworld Norge *writer Don Radoli contributed to this report.*

# Taiwan agency protests BSA's tactics

*Reports from the U.S. group claim that 80% of software used by Taiwanese is illegal*

BY CHRIS BROWN
IDG NEWS SERVICE

TAIPEI, Taiwan — After raiding and suing several software pirates in Taiwan, the Washington, D.C.-based Business Software Alliance (BSA) has run up against something dear to Taiwan: its image.

The Taipei Computer Association (TCA) has protested what it sees as the BSA's image-bruising tactics following an April raid against Taiwan Video & Monitor Corp. (TVM), a TCA member.

TVM, based here, was found to have several bogus copies of popular software programs on its premises at the time of the raid. Some of TVM's computer screens, according to the BSA, sported the words *Pirated 1-2-3.*

**Another target**

The TVM affair was nothing new. Previous BSA targets here include Atari Taiwan Manufacturing Co., Pacific Electric Wire and Cable and Teco Electric and Machinery Co.

However, things soured when BSA officials held their customary press conference after the raid. At that event, the BSA rigged up a simultaneous video link to its Washington headquarters where BSA officials characterized Taiwan as a land where 80% of all software in use is illegal.

The combination of the 80% figure and the live link proved too much for Taiwan. Local journalists seized on the 80% figure, which BSA officials said came from Framingham, Mass.-based market research firm International Data Corp. (IDC), though they could not explain how IDC had arrived at it.

Officials at IDC's Taiwan subsidiary later were at a loss to back up the 80% figure, admitting only that it did not come from any research they had conducted locally. The BSA's lawyers and the IDC staff said the figure probably came from IDC estimates made in the U.S.

Meanwhile, irate TVM officials complained that they had been made the centerpiece of a press conference before they had a chance to contest the case. A second firm that the BSA had raided at about the same time was not named at the press event because it had agreed to settle with the BSA.

BSA lawyers in San Francisco said decisions to publicize the firms that are raided are made on a case-by-case basis. The key factors, according to one BSA attorney, are the amount of evidence against the company and the "sincerity" of its desire to settle.

Following the TVM affair, TCA President C. S. Ho sent a letter protesting the BSA's actions to the American Institute in Taiwan, the unofficial U.S. embassy here.

The letter was not made public, but the major points included a request not to use software piracy cases to unfairly bash Taiwan's image, according to Daniel Lee, a lawyer working for the TCA. The letter also took exception to the BSA's use of the 80% figure.

TCA officials claimed that other studies, including those conducted by the BSA, point out that Taiwan's use of legitimate software is actually higher than that of the Netherlands, France, Italy, Japan, China and many other nations.

The TVM affair has hit several raw nerves in Taiwan, among them the island's historic trade friction with the U.S. and its lack of progress in software development.

Taiwan's hardware production in 1991 will top the U.S.' by $6 billion, but its software output will probably not be more than 10% of that figure — barely any software will be exported.

Taiwan has heady plans to grow software exports to $3 billion to $4 billion by the year 2000, but for now, many local developers spend their time writing Chinese shells and tutorials for U.S. programs such as Lotus Development Corp.'s 1-2-3, Microsoft Corp.'s Windows 3.0, Ashton-Tate Corp.'s Dbase and Autodesk, Inc.'s Autocad.

Taiwan is irked that programs such as 1-2-3, Dbase IV and Autocad are not offered at the discounts common in the U.S. Local price cutting by these firms has been minimal. Lotus now bundles five copies of 1-2-3 with one manual for about 33% off the total list price. Microsoft officials said they are thinking about site licenses for Taiwan but have yet to name a date.

**Legal battle on the horizon**

Meanwhile, software companies have their own gripes. Microsoft has invested more than $1 million to develop a Chinese version of Windows 3.0, which it plans to launch here this month. First, however, the U.S. software giant might take up a legal battle with Taiwan's government-backed Institute for Information Industry (III), which last year bought the Windows driver code from Microsoft and developed its own Chinese Windows 3.0. Microsoft officials admitted they are "very concerned" about this.

III's Chinese-language Windows 3.0 is actually just a local language shell — complete with double-byte character support — for the normal 3.0 program. But Microsoft officials said III's launch of its own version has encouraged piracy because buyers cannot use the III software without the core Windows 3.0 program. To get around this, most users here buy the former and copy the latter.

# Recycling

FROM PAGE 61

office recycling but has no idea of savings realized from it. The company has not kept records, according to contract administrator Jackie Peterson. Money collected from selling material to the secondary market is returned to employees through the company's recreation association, for sports programs and wellness programs, said Keith Williams, senior environmental specialist for the firm.

So far, Williams said, Storage Tek has put its emphasis on cutting down on the area's notorious air pollution — the Denver inversion layer. This particular problem is created by the mountains that surround the city area, lending splendor but also creating a bowl effect that traps pollutants and prevents healthy air circulation.

The company offers free breakfasts to those who bicycle the rolling hills to work. On high-pollution days, the company discounts cafeteria food to encourage employees to stay out of their cars during lunch break. Storage Tek is also converting up to 10% of its fleet to alternative fuels by the end of the year.

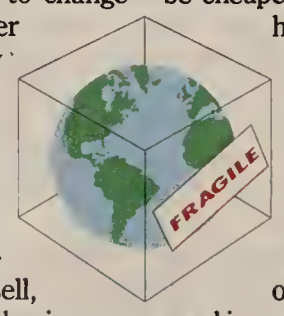
Like most vendors, Storage Tek has had modest conservation efforts for the past few years but went into high gear in the past year.

Whether it is the equivalent of a few engineers' salaries or a hefty dent in the cost of running a facility, conservation initiatives are beginning to pay off for computer companies. "It all adds up," Greenfield said.

# Reuse becoming top option

Uncrating 20 new workstations usually leaves a loading dock crammed with corrugated boxes, blistered plastic sheets and a whirlwind of Styrofoam peanuts.

But a Silicon Valley group with the unwieldly name of R³P² (for Resource Reduction and Recycling of Protective Packaging) plans to change the way packaging is handled. Under the R³P² scenario, dock handlers may still find a loading dock full of effluvia; however, they will be able to box it up and send it back to a recycling station for reuse.




"We can reuse [the packaging waste] seven or eight times before going to a landfill," said Paul G. Russell, chairman of R³P² and a corporate packaging engineer at Hewlett-Packard.

Focusing on reuse rather than biodegradability, the group — whose roster of members includes nearly all Silicon Valley systems and disk vendors, from Amdahl Corp. and Apple Computer, Inc. to Unisys Corp. and Xerox Corp. — faces the initial hurdle of establishing a collection center.

It has decided to pursue reuse rather than attempt to make material more biodegradable because "research shows that things don't degrade in landfills," Russell said.

The collection center will sell material back to the manufacturer for reuse. Russell estimated that the material will sell at about 75% of its original cost.

Transportation could increase the price to approximately that of new materials. "It may not be cheaper, but it's an environmental benefit," he said.

In order to keep the cost of transportation down, as well as to keep a cap on air pollution from transportation, the group has worked out a deal with United Parcel Service, Inc. to use empty space on its trucks.

R³P² is also investigating methods of reducing the amount of material used in packing. "When you ship a computer, do you have to put the power cord in a bag, or can you just throw it in?" Russell said. "Let's stop 100 million bags from going out."

In the short term, the group also wants consumers to do their part. Sun, for instance, will soon include with each workstation box a letter advising customers on where and how to recycle packaging materials, according to Leonard Murray, corporate manager for Sun's investment recovery department.

J. A. SAVAGE

INTERNATIONAL
# BRIEFS

## Down Under

▶ The U.S.-based **Institute of Electrical and Electronics Engineers, Inc. (IEEE)** is taking a leaf from Australian books by adopting the **AS 3563** quality software assurance standard. According to Bob Lions, manager of the information and communications technology group Standards Australia, this marks the first time the IEEE has borrowed from Australian guidelines.

## Top down

▶ Lord Reay, UK Minister for Industry and Technology, took the occasion of his keynote address at a recent **Department of Trade and Industry** seminar at Aston University to ask British business to demand open systems. He urged the audience to respond to demands for flexible information systems.

## A long way to Tipperary?

▶ Buyers in need of a used computer factory in County Tipperary, Ireland, can apply to the **Irish Industrial Development Authority** in Dublin to inquire about buying **Digital Equipment Corp.**'s manufacturing plant, according to a recent report in the British business press. DEC wants to transfer the site's local-area network and wide-area network communications research and development and manufacturing operations — as well as one-third of the plant's 295 employees — to its County Galway location. The firm plans to retain another third of the staff for the short term and hopes that the final third will take voluntary retirement.

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NEWS AND VIEWS JULY 1991

# RAID Technology

**There's talk buzzing around the industry these days about RAID technology. RAID itself is an acronym for Redundant Array of Inexpensive (or Independent) Disks. It can indeed be a very cost-effective approach to storage — with a number of less-expensive disks viewed as a single logical unit. User data is distributed across these disks, with redundant disk capacity provided so that data can be recovered even when a disk fails. Performance and data availability are the key factors in analyzing the effectiveness of a RAID solution.**

## What It Is (And How Digital Pioneered Many of the Concepts)

### Prepackaged RAID: The Hardware Approach

Recently, several vendors have begun offering preconfigured RAID packages. Very much a what-you-see-is-what-you-get product, these packages are usually hard-wired, hardware configurations, with at least one additional drive included in some sort of redundant configuration to provide assurance of high availability. The level of read performance and availability gain is a variable, depending on how the RAID package is configured; however, a write performance penalty (or loss) is incurred with the addition of redundancy. Thus, it becomes critical to assess the read/write ratios in your application in order to determine if there will be a net performance gain or loss.

### Our Flexible Software Approach

Digital has over the past years been offering storage arrays of various-sized disks. While not labeled "RAID" per se, our approach achieves the same results by spreading the I/O workload out among many actuators and thus improving performance and data availability.

This solution is based on the statistics showing that in a typical time-sharing system, roughly 50 percent of the I/O requests go to as little as one percent of the online storage disks, and 80 percent of the I/O requests go to only 20 percent. We recommend a solid state disk for that "hot" one percent and lots of small disks for the next 20 percent.

Two terms are key to understanding our approach to RAID. One is "striping," meaning a software product that automatically breaks a data stream into multiple data streams across multiple disk drives, while presenting that collection of disks to the application as if on a "logical" disk with improved performance. The other is "shadowing" — a software approach to writing the same data to multiple disk spindles, creating multiple copies for improved performance and improved availability of the data.

You can employ our VMS Striping Driver transparently to all VMS applications, in order to aggregate bandwidth for improved I/O throughput, as well as to balance the workload across the disk arrays, for improved response times.

In addition, by utilizing VMS Volume Shadowing and/or VAXsimPLUS, the desired level of availability can be easily added. This is especially important in stripe sets, where the loss of any member of the stripe set results in the loss of the whole stripe set. This combination of striping with shadowing and/or VAXsimPLUS provides a flexible way to enhance the performance and availability of storage arrays — without a write performance penalty. (VAXsimPLUS is, by the way, our expert-based fault management system. It can predict failures in advance and automatically copy the data to another disk, before the data has a chance to become unavailable.)

### To RAID, or Not

Performance, availability, and price are the important factors to consider when implementing RAID technology.

Working with other leaders in the industry, including the University of California, Digital has been pioneering these RAID concepts for some time, and we'll continue to provide cost-effective, flexible ways to bring the combined benefits of high performance and high availability to your computer systems.

Certainly, Digital's VMS Striping, VMS Volume Shadowing, and VAXsimPLUS products, combined with Digital Storage Architecture disks, provide a flexible way to create many of the advantages associated with RAID. We encourage you to discuss your specific applications' storage needs with your Digital sales representative.

continued ➤

**You can handle storage with a few big drives. Reliability is high; life span is relatively long. But it can be expensive. And when one goes down, so does the availability of a lot of your data.**

**Or you can put many smaller (and certainly less expensive) disks to work. Data is distributed across the disks, giving a significant improvement in performance, but a potential decrease in data availability. Adding redundant capacity to overcome the latter is what the RAID concept is all about.**

**Some vendors now accomplish this with a preconfigured hardware package. Digital has successfully pioneered a different approach — offering the benefits of RAID using standard disk drives and sophisticated software to flexibly configure the desired combination of performance and availability.**

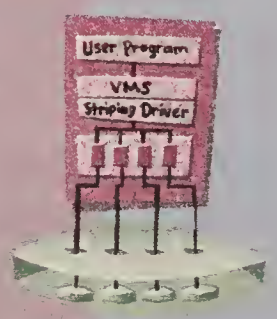
➤ RAID continued

NOTES ON

## RAID Configurations

The term "RAID" was first introduced in a paper presented at the University of California, Berkeley in the late 1980s. That paper described the RAID levels that have since been assimilated into industry terminology, including:

**DIGITAL'S RAID-0/STRIPING**
**The user sees a single, fast "disk," with low availability.**

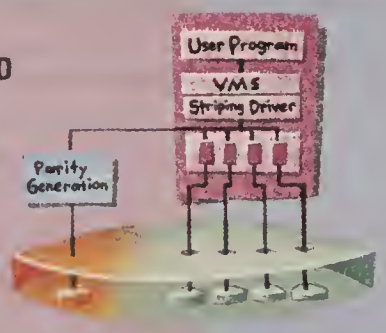



- RAID-0
  - –Striping, with no redundancy
  - –Stripe large with comparison to request
  - –Total capacity equals user capacity
  - –Provides aggregate bandwidth and load balancing

**DIGITAL'S RAID-1/SHADOWED STRIPING**
**The user sees a single, fast, highly-available "disk."**

- RAID-1
  - –Shadowing
  - –Total capacity twice user capacity
  - –Provides highest availability and performance for short transfers

**DIGITAL'S RAID-3/5 ACHIEVED VIA SOFTWARE**
**The user sees a single, fast-read/ slow-write, highly-available "disk."**




- RAID-3
  - –Stripe small with respect to request size
  - –Single request spans all disks
  - –Total capacity equals user capacity plus one disk
  - –Provides best optimized performance for long transfers
- RAID-5
  - –Stripe large with respect to request size
  - –Single request generally one disk
  - –Total capacity equals user capacity plus one disk

Digital's striping can be considered RAID-0, which is effectively a prerequisite for RAID. Our shadowed drives are equivalent to RAID-1. Thus our existing capability of configuring striped shadow sets in software offers RAID-0 and RAID-1 today, with no special hardware required.

It could also be said that using VAXsimPLUS with striping comes close to what's presented as packaged RAID-3 availability, without the need for a dedicated redundant drive or the overhead of generating parity on all writes.

# Network Management Services: Digital Delivers

It's probably fair to say one of your primary goals is to keep your network up and running around the clock. Digital offers you a choice in how you meet that goal.

Digital's Network Management Services are modular by design. You may opt to maintain and manage your network with your own resources, using our Network Management tools or having us play an advisory role. As your business and computing environment changes, so may your network management needs — from sharing management responsibilities with Digital, on to having us handle all phases of managing your multivendor network.

**Our multivendor network management services are tailored to help you as much as you need, whenever you need. Further proof of how Digital is setting the standards for services that are flexible and open.**

We provide a full spectrum of Network Management Services, complemented by methods, skills, and tools honed by experience. Digital has, in fact, been managing its own network for 18 years; it's the largest non-military network in the world, with 60,000 nodes at 540 sites in 31 countries — and growing.

### Tailor-Made Services Means the Choice Is Yours

Our Network Management Services offer you a choice in flexible, open programs:

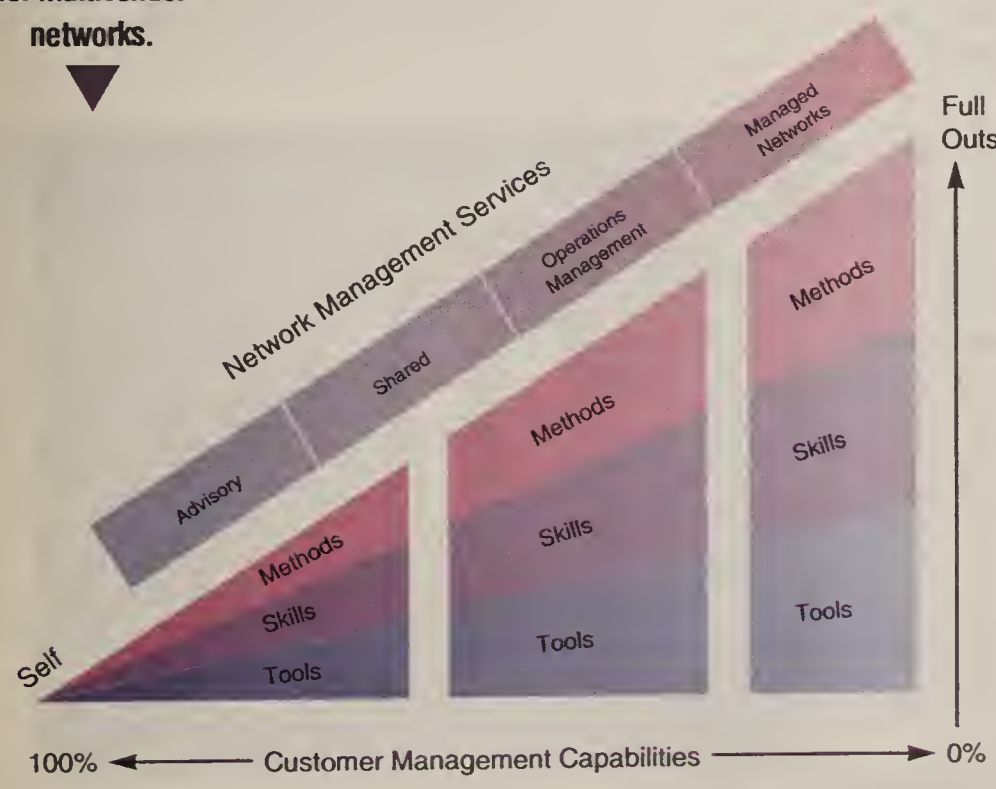
- *Management Tools Implementation* is for when you choose to self-manage your network. Here, Digital provides standards-based network management tools that include DECnet and TCP/IP. We can assist your staff in starting up these advanced network management tools and provide instruction for their use in your particular network environment.
- *NETsupport Advisory Services* provides backup network expertise through telephone advice and consultation. When you install Digital's DECmcc network management tools, NETsupport specialists can remotely access and diagnose your problems. Such on-demand support from network experts can increase your staff's effectiveness.

- *NETsupport Shared Services* offers an array of open network management tools, installation support, telephone advisory support, and on-site consulting. This cost-effective approach enables you to complement your internal network management staff and maximize your investment in leading-edge technology.
- *NETsupport Operations Management* focuses on helping you with the ongoing management of DECnet and TCP/IP networks. As a result, you get optimum network availability and improved multivendor network control — all with a minimum of your own resource commitment and technology investment.
- *Network Operations Training* offers courses tailored toward those involved in the planning, implementation, and management of an effective multivendor, multiprotocol network. The goal is to develop and enhance skill sets, thus increasing proficiency in daily responsibilities.

### Just One Part of the Network Services Picture

Digital's Network Services provide a comprehensive portfolio of flexible services that include not only Network Management but also Network Consulting and Network Implementation. Our service solutions are geared to ensuring you success in meeting the three critical networking challenges encountered in today's multivendor environments: connectivity, interoperability, and manageability.

**Digital's Network Management Services offer an open, modular approach — from advisory support and tools as you manage your own networks, progressing up to full management support for multivendor networks.**




**For more information on how to put Digital's Network Management Services, or any of our other Network Services, to work for you, contact your local Digital sales representative or Digital Services office.**

NEWSFLASH

### ACE Sets RISC Standards

The ACE (Advanced Computing Environment) initiative has developed a set of hardware and operating system standards for RISC computing which will give you the ability to choose from tens to thousands of off-the-shelf applications for any ACE-compatible system.

As a member of ACE, Digital continues our commitment to open standards. By incorporating the MIPS R3000 chip, little endian byte ordering and OSF technologies, our DECsystem 5000 family is compatible with ACE standards TODAY.

### Option to Save: Order Repaired HDAs

When it's time to buy or exchange RA81 and RA90 HDAs, you now have the option to order repaired HDAs at substantial savings. The repaired HDAs meet Digital's exacting standards, and are tested to ensure the high level of performance and reliability you expect from a Digital part. Call 800-225-5385 today to order a repaired HDA, or for more information. And keep these figures in mind.

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| RA90 | $9,900.00 | $18,892.00 | SAVE 48% |

If you want to exchange:

| HDA | REPAIRED | LIST PRICE NEW | |
|---|---|---|---|
| RA81 | $1,695.00 | $ 4,706.00 | SAVE 58% |
| RA90 | $6,900.00 | $13,205.00 | SAVE 48% |

### For Information Technology Managers: Digital's POLYCENTER Solution

Digital recently announced the POLYCENTER solution for the management of computer operations in complex, distributed, multivendor environments. POLYCENTER consists of a number of operations management products from both Digital and its strategic technology vendors as well as a comprehensive set of services — all designed to take advantage of Digital's Enterprise Management Architecture (EMA). Today, POLYCENTER provides robust distributed management capabilities on VMS and substantial capabilities in other environments. Over time, the POLYCENTER solution will expand to offer complete, enterprise-wide multivendor operations management capabilities.

# Hooking Up LANs: New "Smart" Hubs Make It Easy

*DEChub Desktop Interconnect System lets you mix and match Terminal Server, Concentrator, and Bridge modules.*

Most people who have ever set up a stereo system can take a PC out of its box, and in an hour or two, make it nearly functional. That's even without reading the directions.

But connecting that PC to a Local Area Network has usually meant week-long delays, involving system managers, telecommunications personnel, and wiring contractors.

Now Digital has come out with a series of workgroup LAN products that let even non-technical users plug themselves into the network with a snap. These so-called "smart" hubs configure themselves automatically so no set-up is required — you're online in seconds.

Digital's group manager for desktop interconnect products, Ralph Dormitzer, explains how they work:

"People are really surprised how easy these things are to use. You take the hub out of the box and snap in the terminal server module. You plug a single Ethernet cable in one side, and plug in your terminals on the other. Then you log in — that's it. It works, and you don't have to know anything about Ethernet or Group Codes or system management.

"Another thing is they hot swap — you can snap in another terminal server without bringing the network down. You can snap in a repeater module to add eight more Ethernet ports that radiate out in a star topology. Or you can snap in a bridge module to isolate local traffic from the enterprise network."

### What does the hub replace?

"Wiring closets, for one thing. You used to need a six-foot-high rack of boxes in the satellite equipment room, with special cooling and power requirements. Now you can support up to 128 users in one tenth the footprint. You can hang it on a wall, under a shelf or anywhere in an office environment. It makes a lot better use of space.

### What about competing hub systems?

"Our hub and snap-in modules are significantly smaller, and in fact you don't even need the hub for single modules. Digital is the only vendor to offer modules that can be used either in standalone or hub-based configurations. Other vendors use traditional backplanes and boards, so the network has to be shut down while a technician swaps in boards. Then they require a system manager to reset configuration parameters — ours do that automatically.

"So they're a lot easier to install initially, and a lot easier to manage and grow. Additional modules can be snapped in to the hub as needed. Multiple hubs can be connected together or bridged to the enterprise network. Terminal servers, bridges, and repeaters can be mixed to support networks made up various kinds of multivendor PCs, terminals, and UNIX-based or VMS hosts. Plus they support all available cabling options — ThinWire, coax, 10baseT and fiber.

### What about price/performance?

"Taken together, they're the highest-performance devices on the market today, and at or below competitive prices. At about $200 per user, the terminal servers lead the industry in price/performance, with each of the eight ports running continuously at 38.4 Kbits per second. The LAT protocol, which we've widely licensed to other vendors, is about 10 times more efficient in the utilization of the CPU. The bridge runs at 30,000 packets per second, the absolute maximum one can go.

"Aside from initial price, management costs are decidedly lower. They're easy to use because they self configure — we've made the underlying complexity of the technology invisible. You can manage them locally or remotely as part of the enterprise network, using either DECnet/OSI or other standard open protocols such as SNMP. If there's a short or cable fault in the network, they'll actually shut down that port automatically to protect themselves — that's another Digital patented feature.

### What about investment protection?

"We've announced the first five products of a family that will continue to expand over time. They're functionally compatible with all of our previous products, and we've spent a lot of design energies into creating a new and elegant packaging technology that will remain expandable and competitive in the future.

"In logic design, we've shrunk packaging size and power requirements by a factor of 10. By moving functionality from firmware to silicon we've also dramatically reduced costs and increased reliability rates in terms of Mean Time Between Failure to an extraordinary 100,000 hours plus — more than 10 years.

"In physical design, these products have just won the U.S. Industrial Design gold award for Computer Product of the Year. When people see these products, it's clear that they're user-friendly, and that their form follows from function. At a gut level, they look and feel good as an addition to an office environment."

### Ordering Information for the DEChub Desktop Interconnect Family

DEChub modules can be used in any combination in the DEChub backplane, or on a standalone basis with an optional modular power supply. Single unit prices for the DEChub Desktop Interconnect family are as follows:

DEChub 90 with eight slot Ethernet backplane
Part # DEHUB
$ 890.00

DECserver 90L eight line terminal server
Part # DSRVD
$1,450.00

DECbridge 90 Ethernet bridge
Part # DEWGB
$2,890.00

DECrepeater 90T Ethernet eight port repeater for 10baseT twisted pair cabling
Part # DETMR-MA
$1,590.00

DECrepeater 90C Ethernet six port repeater for ThinWire coaxial cabling
Part # DECMR-MA
$1,590.00

**For more information, call our Technical Consulting Center at 800-343-4040, ext. 115.**

**Part of the DEChub Desktop Interconnect family, the DECserver 90L is an eight-line LAT protocol terminal server that provides high-speed communications and fast connections to service nodes. It's small in size, and affordable in price.**

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# Resumes can float or sink job hunters' chances

BY CATHLEEN A. DUFFY
CW STAFF

If you feel like you are treading water in an overcrowded pool of qualified job applicants, you may want to re-evaluate your primary self-presentation tool — your resume. A good resume may not guarantee you the job you want, but a bad one can ensure that you never get beyond the mail stack.

Here are some key pointers to adding spit and polish to your curriculum vitae:

**• Try the personal touch.**
Perhaps the best way to catch a hiring manager's eye is to send a personalized cover letter along with the resume.

"If I get a resume that has a short cover letter addressed to me, I'm probably going to read the resume in more detail than if I just got a letter that says, 'Dear Sir,'" says Richard Bell, contract recruiter for Ernst & Young in Dallas.

Also, follow up by calling the recruiter four or five days after you've sent the resume, he adds.

**• Highlight objectives.**
The first thing a manager's eye searches for is a career goal. Some recruiters suggest that applicants tailor each resume to each job through the career objective. Otherwise, if the resume doesn't match what the manager's looking for, he'll put it aside.

**• Flaunt accomplishments.**
Too often, applicants list responsibilities on resumes rather than show what they've accomplished. "You can be responsible for $5 million worth of systems assets, but that doesn't mean you've had any direct influence on it," says Martin A. Morris Jr., assistant vice president at Amsouth Bank NA in Birmingham, Ala. According to Morris, don't start a list with "responsibilities include," but rather use action words such as *analyzed*, *implemented*, *enforced* and *monitored*.

**• Accentuate skills.**
Highlighting all of your technical skills from programming languages, operating systems and hardware in a separate category works as an easy reference point for hiring managers, says Holly Maurer-Klein, managing director at The Human Resource Management Group in Pittsburgh.

"Some people say it's not good to be too specific in a resume because you might screen yourself out as well as in. But at times, you need to take a risk when you're dealing with a specific hot technology," says Harvey A. Daniels, human resources information center manager at the Federal Reserve Bank of Chicago.

**• Make it readable.**
The most obvious and yet most important factor in getting your resume noticed is to make sure it's clear and easy to read.

"On a basic level, your resume should be professionally done by laser printer or typeset and printed on good quality bond paper. The whole key to it is to make it easily readable so that the information jumps off the paper," says Jack Erdlen, president of The Erdlen Bograd Group, Inc., an employment consulting firm in Wellesley, Mass.

**• Keep it short and sweet.**
The biggest resume turnoff, managers say, is to be faced with a three-page or longer resume. "I received one resume one time that was 75 pages long. I never got past the first page. Recruiters don't care if you belong to the Kiwanis Club or if you play tennis," Bell says.

Morris adds that if a manager wants a more in-depth picture of an individual, he'll ask for it.

**• Avoid job hopping.**
While a huge resume is a problem, it can be corrected. Harm can come from an irregular employment pattern, managers say.

"What would turn me off in a resume most would be a considerable number of short-term jobs in the last 10 years. I would immediately be very suspicious about the stability of that person," says Herb Halbrecht, president of executive recruitment firm Halbrecht and Associates in Stamford, Conn.

**• Don't bend the truth.**
One problem that hiring managers come across from time to time is resumes that don't reflect the whole truth. But managers say that these white lies — or bold-faced lies — are eventually caught. "If a mediocre person tries to pass himself off at a higher level than he really is, he'll be found out when I call people he's worked with," Halbrecht says.

**• Catch those errors.**
Last but not least, carefully proofread your resume or have someone do it for you. "A resume with mistakes reflects on the person. Someone who allows one to go out with mistakes is allowing a statement to be made about himself," Daniels says.

Duffy is a *Computerworld* associate editor, features.

## Hold the anchovies

There are many ways to get an employer's attention: a striking resume, a referral, a pizza. Well, maybe not a pizza.

Take the case of one zealous applicant for an IS position who had his resume — along with a pizza — delivered to a manager during lunchtime. An attached note read: "Busy executives seldom have time for lunch, so why not have a meal on me? And if you don't mind taking the time to read my resume, it would be appreciated."

The person followed up two weeks later by sending the manager a watermelon and a note that said: "I haven't heard from you. I thought maybe you were waiting for dessert."

The applicant, however, did not get the interview because he did not have the appropriate background.

Whiz-bang tricks such as these generally do not work, hiring managers say. "Gimmicks get a laugh, but you wonder if you're going to hire a comic or a professional," says Jack Erdlen, president of The Erdlen Bograd Group, Inc., an employment consulting firm in Wellesley, Mass.

"Gimmicks aren't very professional, and they may work against you getting an interview," concurs Richard Bell, contract recruiter for Ernst & Young in Dallas.

Others say that a little creativity can't hurt anyone, but that applicants can stretch it too far and take away from the real matter at hand, which is their skills and attributes directly relevant to the job.


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INDUSTRY CURRENTS

# IS doors are opening at major hotels

BY ALICE LAPLANTE
SPECIAL TO CW

Although the hotel industry is in the midst of a major economic slump, information systems opportunities at big-name hotels still exist — and will continue to grow in the next few years, according to hotel IS managers.

"The industry has been lagging five years behind everyone else in taking advantage of available technology," says Cliff Barry, vice president of systems at Red Lion Hotel and Inns, a chain of 56 hotels headquartered in Vancouver, Wash. "But we've had our wake-up call and are finally beginning to understand the value that technology can bring to an organization."

Many of the industry's major players have recently embarked on enterprisewide systems development efforts to revamp older technologies currently in place. The goals are to make hotel operations more efficient and to increase revenue through the innovative collection and manipulation of data on guests.

The net result of hotels playing technology catch-up? Ample IS jobs at the major chains.

For example, Marriott Corp. in Washington, D.C., is beginning a worldwide IS project and is currently hiring Unix and C programmers to rewrite all its major hotel applications from scratch, says Stewart Rawley, director of human resources for hotel systems at Marriott. He says he expects the project to take about two years to complete.

ITT Sheraton Corp. in Boston is now completing a major distributed computer project, putting a Unix-based front end onto its worldwide reservations network, for which it hired many Unix, DB2 and Cobol programmers. Now that the project is nearly complete, Sheraton will be hiring experienced IS technicians to perform maintenance functions.

Still, those smaller or less successful hotels that are not in a position to do a major systems overhaul will probably not be hiring until the industry rebounds.

"Although we are doing well ourselves, there aren't a tremendous amount of positions to be filled for routine IS functions at the present time," says Charlie Hamlett, vice president of IS at La Quinta Motor Inns, Inc., a hotel chain based in San Antonio.

The most significant trend in the hotel industry is the move away from the IBM mainframe world to Unix, which is attractive because of its cost-effectiveness, portability and sophisticated communications facilities.

As a result, IS workers proficient in C, relational databases such as Oracle or Informix or fourth-generation languages that run under Unix will be especially sought after, Hamlett says. La Quinta has already installed 200 networked workstations running The Santa Cruz Operation's Xenix for certain hotel operations and is in the process of doing performance testing to see if the same technology will support the more demanding requirements of its reservations system.

Hotels are also seeking professionals who are adept in networking and telecommunications protocols and client/server applications development.

"Traditionally, the hotel industry has solved a problem by throwing more personnel at it," Barry says. But in these lean and mean times, it isn't practical to hire more check-in clerks, maids or telephone operators when there is an operations bottleneck. "People are finally understanding that technology can help solve some of these problems," he says.

IS managers say they look for workers who are quick to come up with innovative ways technology can be used to solve problems specific to the hotel industry. As the hospitality industry digs in for what many say they believe could be another four to five slim years, IS managers say technical workers with a business twist who can save money, time or both through systems solutions will be in demand.

"Anyone combining a solid technical skill set with a good operations background — particularly in the hotel field — will be considered especially valuable," says Larry Hall, worldwide director of hotel systems and telecommunications at Sheraton.

LaPlante is a free-lance writer based in Palo Alto, Calif.

## Putting the industry under one roof

Because hotel IS architecture has traditionally been a hodgepodge of disparate systems developed and installed over time for individual departments — few of which communicated effectively with others — redundancy and incompatibility have been the names of the game. But now, IS managers are getting the green light to bring order out of the industry's chaotic past, and opportunities are opening up.

Most hotels historically made a distinction between centralized reservations systems, the systems that ran overall corporate business functions at hotel headquarters, and the "property management" systems that performed operations in individual hotels. However, there was little or no connection between these systems. Even within the property management IS arena, there was confusion: The systems developed for sales were different from those created for housekeeping, which were yet again separate from applications created for accounts payable or inventory.

As a result, most major hotel chains are in the process of reevaluating their entire systems strategy to form what Dave Christien, vice president of MIS at Days Inns of America, Inc. in Atlanta, calls the "enterprise model" that will tie it together.

"The enterprise model is a view of how information should flow without regard to current systems: You then overlay it with what systems you currently have in place and come up with some sort of plan for how to get from where you are to where you want to be," Christien says.

In many cases — as in the case of Sheraton, Marriott and other hotels with major enterprise efforts under way — this means hotels are in a hiring mode.

But whether hotels add to their permanent IS staff, hire outside consulting firms or retrain existing workers in order to implement the enterprise model depends on the individual hotel, says Christien, who adds that, given the bleak economic picture at this point, some may decide not to increase their actual on-staff head count immediately.

The goal, Christien says, is to try to eliminate bottlenecks and redundancies while enhancing information flow among the various departments. "You basically have to start from scratch and interview all departments," he says. "You find out what processes they perform, what systems currently exist and, finally, what should exist."

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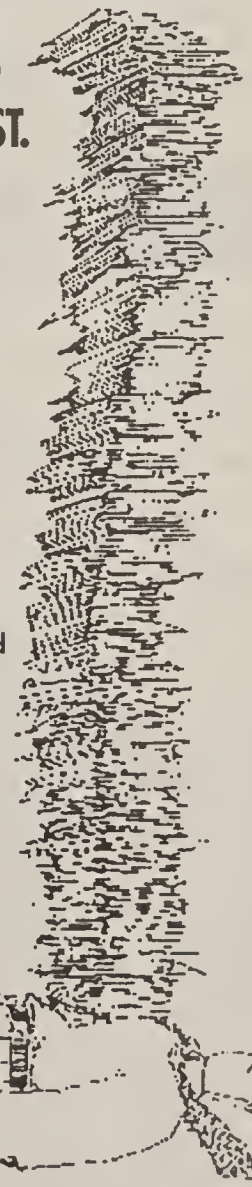

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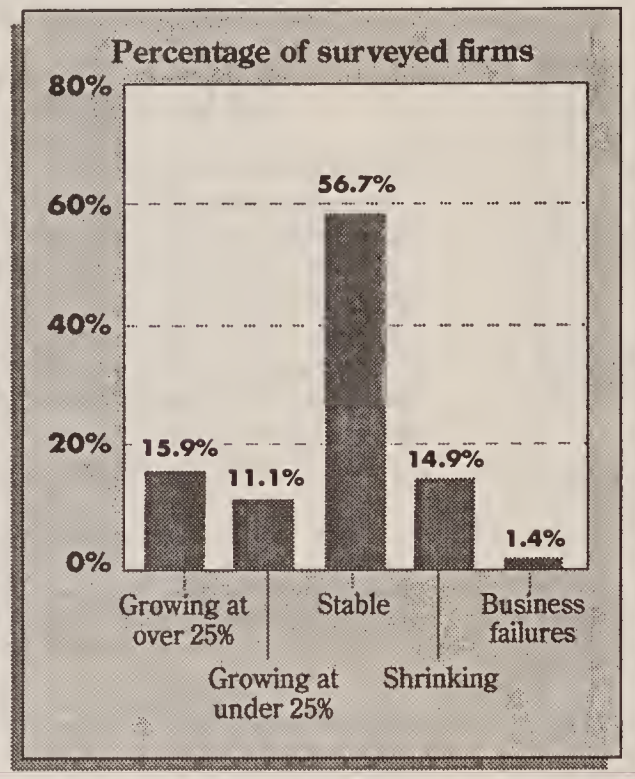


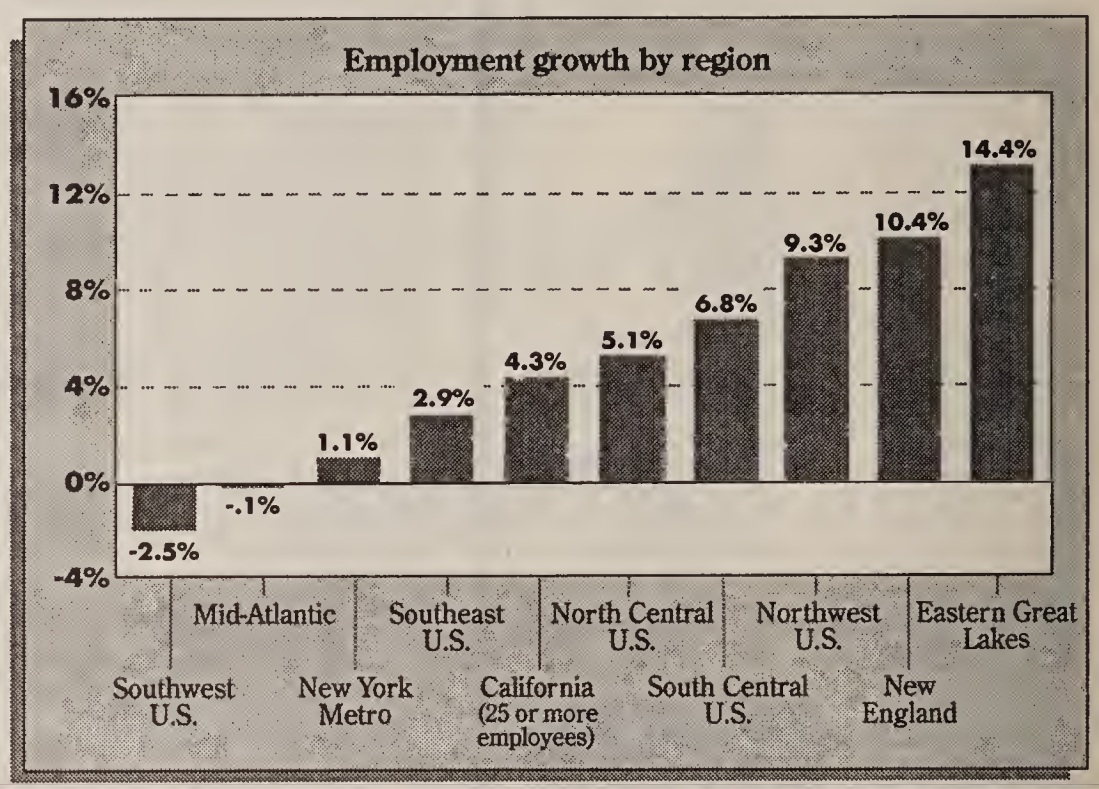



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# DOS and Unix coexist with help from dual architecture

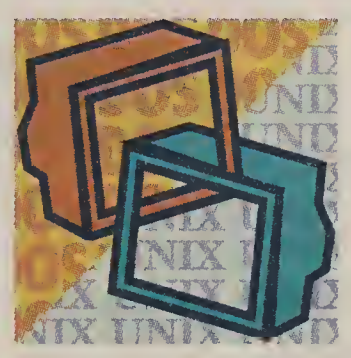
BY ALAN RADDING
SPECIAL TO CW

While most companies standardize on DOS or Unix, some organizations have users who need both operating systems in the course of their daily routines. For these companies, a dual-architecture solution — a machine that runs both DOS and Unix — lets them have their proverbial cake and eat it, too.

Without a dual-architecture machine, users must jump from one workstation to another because certain applications are written for only one of the systems. For instance, an engineer may work on a Unix workstation running an engineering application and then move to a DOS machine to access the general personal computer productivity tools to write a report or analyze a spreadsheet. This solution requires twice the desk space and carries a double price tag.

Another approach relies on a network as a bridge between DOS and Unix. Over the network, users can run applications and access data across platforms and operating systems. However, depending on the nature of the work, the network solution is also unsatisfactory.

Take imaging on a network, for instance. Don Noack, a senior technician at Sandia National Laboratories in Albuquerque, N.M., analyzes image data using a Unix program that runs only on a Sun Microsystems, Inc. Scalable Processor Architecture (Sparc) workstation. His high-resolution camera, however, speaks only to a DOS-based system. "I could get onto the network with the PC, but that's not the best option for image processing" because of the large amount of data he must move over the network, he explains. Instead, he turned to one of the new generation of dual-architecture workstations.



There are two ways to build a dual-architecture workstation: through software emulation or with hardware. In general, software emulation is less expensive and more readily available, but performance can suffer, depending on the application. The hardware solution delivers top performance but is more costly and can be difficult to integrate in the network environment.

The traditional rule of thumb is to use software emulation (DOS emulation under Unix) when the user has only an occasional need to use DOS applications or access DOS data, as in the case of the designer who spends his time on a Unix-based computer-aided design package and infrequently goes to DOS to write a letter.

Companies prefer the hardware implementation when performance is important. With hardware, they enjoy full Intel Corp. 80386- and I486-based PC power and full Unix power.

Rahjid Khanolkar, senior systems administrator in the investment systems department at Teachers Insurance and Annuity Association in New York, opted for the ease of the software solution. "The beauty of Soft-PC [from Insignia Solutions, Inc. in Sunnyvale, Calif.] is that it's software. I load it centrally on the network and don't have to put additional hardware in each device." Otherwise, with more than 200 Sun workstations, Khanolkar would have a lot of costly hardware to install.

Teachers Insurance explored other dual-architecture solutions, but each had its problems. Early dual-architecture workstations "were too slow," Khanolkar recalls. Plug-in coprocessor boards are too expensive — $1,600 to $1,700 per machine vs. $600 per Soft-PC license — and require someone to go around and physically plug a board into every workstation.

### The hardware approach

Noack considered the software emulation approach, but the technical support staff and other users discouraged him. "People here have not had good experiences with software emulation. They felt the performance wasn't good enough," he explains.

Instead, he turned to a hardware solution: the Mariner 4I from Mars Microsystems in Wexford, Pa. The 4I is a fully compatible Sparc workstation (25 MHz; 16.8 million instructions per second) built on a PC base (25 MHz; 80386 processor).

Noack accesses the Sandia network and runs his Unix-based analysis applications through the Sparc portion of the machine while his image-gathering camera speaks directly to the DOS portion of the machine. Mars provides software to let users move files back and forth between the DOS and Unix portions of the machine.

Gulf Interstate Engineering in Houston went with a Sparc add-in board from Opus Systems in Mountain View, Calif., for the PCs used by its systems support group, reports Dan Gauthier, director of MIS. Support group users regularly bounce between DOS and Unix applications. The Sparc board saves them from having to move to a second workstation and costs substantially less than a second machine, Gauthier says.

However, Gauthier's overriding concern is compatibility, not cost: "If something doesn't provide 100% compatibility, it has no value to us. They can't lower the price enough to make up for the time and cost of workarounds." Opus quickly resolved an initial problem with Windows compatibility.

The Opus product offers a 100% compatible Sparc clone board placed on the PC bus. Gulf Interstate reserves a separate hard disk for each machine, and users toggle between the Unix and PC machines with ease.

For users such as Teachers Insurance, dual architecture is an interim phase in a slow migration from DOS to Unix. Others, however, expect to straddle the DOS and Unix worlds for some time to come.

Radding is a free-lance writer in Newton, Mass.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| XT Model 089 | $450 | $450 | $400 |
| AT Model 099 | $575 | $675 | $500 |
| AT Model 239 | $625 | $725 | $600 |
| AT Model 339 | $750 | $1,000 | $700 |
| PS/2 Model 30-286 | $1,150 | $1,300 | $1,000 |
| PS/2 Model 60 | $1,300 | $1,700 | $1,300 |
| PS/2 Model 70P | $3,400 | $3,600 | $3,200 |
| Compaq Portable II | $750 | $1,050 | $700 |
| Portable 286 | $1,100 | $1,350 | $1,000 |
| SLT 286 | $1,700 | $1,900 | $1,550 |
| Portable 386 | $2,000 | $2,100 | $1,500 |
| LTE 286 | $1,800 | $1,900 | $1,600 |
| Deskpro 286 | $800 | $1,000 | $700 |
| Deskpro 386/20 | $2,150 | $3,000 | $2,000 |
| Apple Macintosh Plus | $750 | $975 | $700 |
| SE | $1,100 | $1,250 | $1,050 |
| IIX | $3,550 | $3,600 | $3,500 |
| IICX | $3,300 | $3,600 | $3,200 |
| IIFX | $5,400 | $5,800 | $5,200 |

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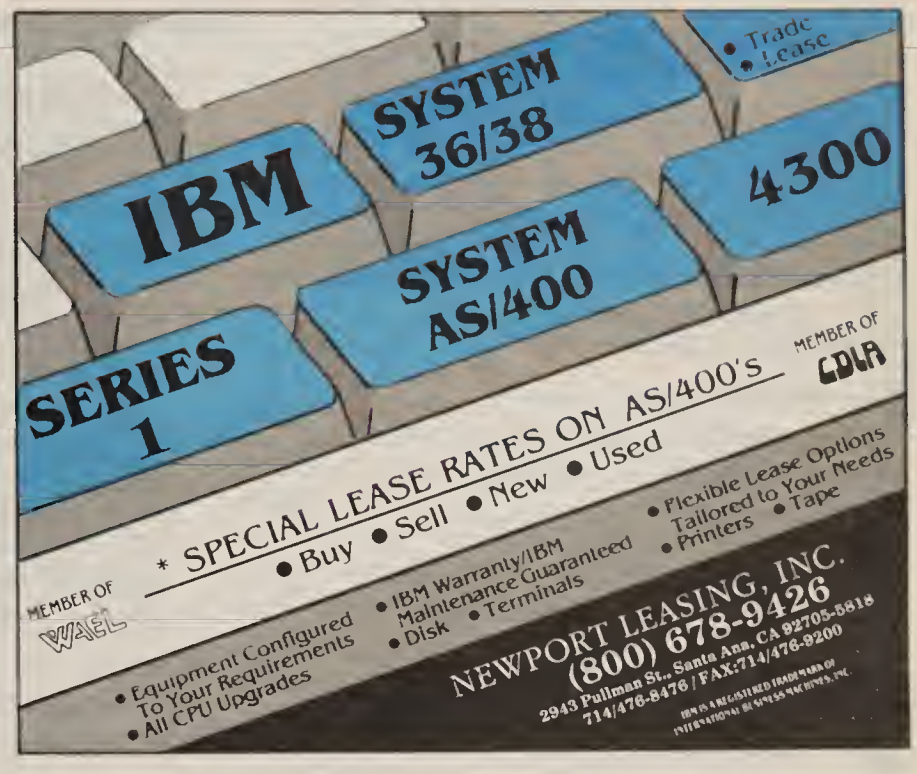


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- PC Based Case Tools for Application Development, Cobol Code Generation and/or DB2 Table Design (proposals due August 20, 1991)
- A Cobol On-Line Interactive Testing and Debugging Tool (proposals due August 14, 1991)
- IBM 3800 Model 3 Upgrades and Associated Software (proposals due August 26, 1991)

Request for Proposals may be obtained by calling Kathy Klem at (212) 206-3043.
Further details regarding the conference and specifications may be found within the RFP. All conferences will be held at 11:00 AM.

**DIGITAL DEALERS ASSOCIATION REQUEST FOR PROPOSAL**
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**UNITED STATES BANKRUPTCY COURT**
**NORTHERN DISTRICT OF NEW YORK**

**In Re: ICS CYBERNETICS, INC., Debtor.**

**In Proceedings Under Chapter 11; Case No. 88-00478**

NOTICE OF ENTRY OF ORDER REQUIRING CREDITORS ASSERTING ADMINISTRATIVE EXPENSE CLAIMS TO FILE ADMINISTRATIVE EXPENSE PROOFS OF CLAIM OR TO FILE AND SERVE A MOTION OR APPLICATION FOR THE AWARD AND ALLOWANCE OF AN ADMINISTRATIVE EXPENSE CLAIM.

TO ALL PERSONS ASSERTING AN ADMINISTRATIVE EXPENSE CLAIM AGAINST THE ABOVE REFERENCED DEBTOR:

**PLEASE TAKE NOTICE,** that the United States Bankruptcy Court for the Northern District of New York has entered an Order requiring all persons who assert an administrative expense claim against the Debtor arising out of and attributable to obligations incurred or actions taken by the Debtor on or before July 1, 1991, whether such claim is fixed, liquidated, unliquidated, contingent or disputed, to file an administrative expense proof of claim or to file a motion or application for the award and allowance of such administrative expense claim, on or before AUGUST 1, 1991 in accordance with the instructions set forth below with the Clerk of the United States Bankruptcy Court, Northern District of New York, 10 Broad Street, 230 United States Courthouse, Utica, New York 13503.

ANY ADMINISTRATIVE EXPENSE PROOF OF CLAIM OR MOTION OR APPLICATION FOR THE AWARD AND ALLOWANCE OF SUCH ADMINISTRATIVE EXPENSE CLAIMS FILED AFTER AUGUST 1, 1991 WILL BE DISALLOWED. ANY PERSON OR ENTITY THAT IS REQUIRED TO FILE AN ADMINISTRATIVE EXPENSE PROOF OF CLAIM OR MOTION OR APPLICATION THEREFORE ON OR BEFORE AUGUST 1, 1991 AND WHO FAILS TO DO SO WILL NOT BE AWARDED AND ALLOWED AN ADMINISTRATIVE EXPENSE CLAIM AGAINST THE DEBTOR'S ESTATE FOR PURPOSES OF VOTING AND DISTRIBUTION, AND ANY ADMINISTRATIVE EXPENSE CLAIM OF SUCH PERSON OR ENTITY WILL BE FOREVER BARRED. THE DEBTOR AND CREDITORS COMMITTEE ARE RESERVED THE RIGHT TO CHALLENGE ANY AND ALL CLAIMS ON ANY AND ALL AVAILABLE GROUNDS INCLUDING THAT A PARTICULAR ADMINISTRATIVE EXPENSE CLAIM WAS NOT TIMELY FILED.

**EXCEPTIONS:** PERSONS WHO ASSERT ADMINISTRATIVE EXPENSE CLAIMS SOLELY AS ATTORNEYS, ACCOUNTANTS OR OTHER PROFESSIONAL WHOSE RETENTION BY THE DEBTOR WAS APPROVED BY ORDER OF THIS COURT AND WHOSE CLAIMS WOULD SEEK REIMBURSEMENT FOR FEES AND DISBURSEMENTS INCURRED IN REPRESENTING THE DEBTOR IN THESE PROCEEDINGS ARE EXCEPTED FROM THIS ADMINISTRATIVE EXPENSE CLAIM BAR DATE. PERSONS OR ENTITIES WHOSE CLAIMS ARISE OUT OF AND ARE ATTRIBUTABLE TO OBLIGATIONS INCURRED OR ACTIONS TAKEN BY THE DEBTOR ON OR AFTER JULY 1, 1991 ARE ALSO EXCEPTED FROM THE ADMINISTRATIVE CLAIMS BAR DATE ESTABLISHED BY THE COURT AND MAY FILE ADMINISTRATIVE EXPENSE PROOFS OF CLAIM AND MOTIONS OR APPLICATIONS FOR THE ALLOWANCE OF ADMINISTRATIVE EXPENSE CLAIMS IN ACCORDANCE WITH APPLICABLE PROVISIONS OF THE BANKRUPTCY CODE AND RULES.

A creditor may, for cause shown, apply to the Court prior to the expiration of the administrative claims bar date for an order extending the administrative expense claims bar date as to such creditor only. Any such application must be on three days prior written notice to the attorneys for the debtor.

ALL PERSONS WHO FAIL TO FILE AN ADMINISTRATIVE EXPENSE PROOF OF CLAIM OR TO OTHERWISE MOVE OR APPLY FOR THE AWARD AND ALLOWANCE OF AN ADMINISTRATIVE EXPENSE CLAIM IN ACCORDANCE WITH THE COURT'S ORDER SHALL BE FOREVER BARRED FROM MAKING APPLICATION FOR AND BEING AWARDED ADMINISTRATIVE PRIORITY TREATMENT PURSUANT TO 11 U.S.C. SS503 AND 507 UNDER THE TERMS AND CONDITIONS OF ANY CHAPTER 11 PLAN OF REORGANIZATION EVENTUALLY FILED AND CONFIRMED. Proofs of claim should be filed in conformity with Official Form 15 to the Bankruptcy Rules of Procedure with: Clerk, United States Bankruptcy Court, Northern District of New York, 10 Broad Street, 230 United States Courthouse, Utica, New York 13503, ON OR BEFORE AUGUST 1, 1991.

Further information may be obtained from the Debtor's attorney or the Creditors Committee at the addresses listed below.

**Dated: Buffalo, New York, June 24, 1991**
**Buy Order of the Court.**

S/Stephen D. Gerling
**Stephen D. Gerling, U.S.B.J.**

Grass, Balanoff & Whitelaw, P.C.
Mary Lannon Fangio, Esq.
Attorneys for Debtor
247-259 West Fayette Street
(315) 474-7832

Hodgson, Russ, Andrews, Woods & Goodyear
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"The semiconductor industry is facing a seasonal slowdown. **Cypress Semiconductor Corp.**'s strategy makes sense in the long term, though. It's a reasonably well-managed company with a very broad product portfolio of relatively high-margin goods. For the next couple quarters, Cypress may be under pressure — as are the more mature chip companies — but it's ultimately quite attractive.

"**Intel Corp.** is in for trouble. The second quarter [to be reported the week of July 14] will be very strong. However, given that the company just slashed its prices on various processors, the third quarter is quite a question mark. I rate it neutral in the long term. Short term, it might be an attractive trade because the [stock] price has slipped recently. But you need a certain mentality to trade stocks like that.

"The strongest play now is **Motorola, Inc.** Its stock is selling well below its high of the last year, which you can't say for many semiconductor firms that are actually making money. Motorola's product strategy in communications makes a hell of a lot of sense. Growth in that area will be excellent. There aren't many $10 million companies that are able to grow at 15% per year, but Motorola's one of them."

## ANALYSIS IN BRIEF

Local-area network suppliers had an excellent first quarter, with sales gains averaging 92% and earnings more than doubling, on average. However, this quarter's outlook is unclear. Small resellers in niches such as the legal and medical markets are doing well, but broader-based vendors said business is tough. LAN sales in financial and real estate markets are particularly weak.

Because every network needs an operating system, financial reports from **Novell, Inc.** — which dominates the network operating system market — are the best indicator of current events. Last quarter, the company's end-user sales showed zero growth from the previous quarter, not counting a large stocking order from IBM.

Prospects for **Synoptics Communications, Inc.**, a major LAN equipment maker, look good. No doubt the rise in competition in the intelligent-hub arena might cause some price-cutting, but the company's broad product line and high research and development budget make Synoptics very attractive.

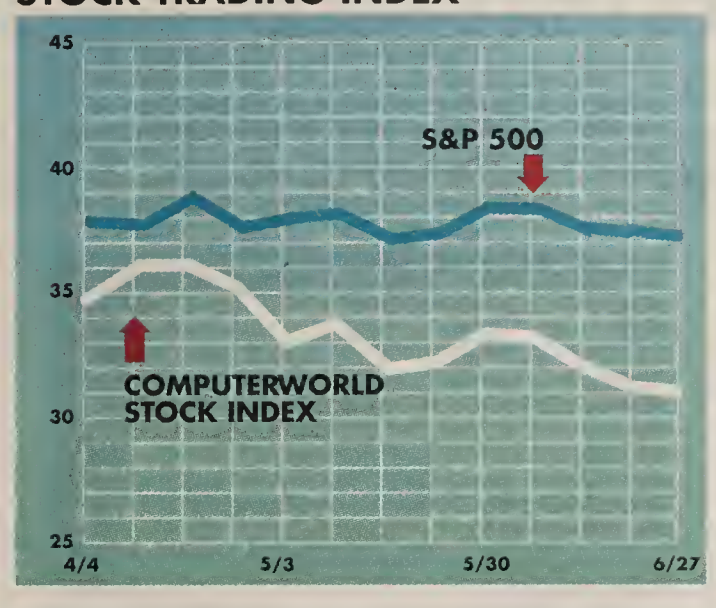
Less compelling is **Digital Communications Associates, Inc.** During the last 12 to 18 months, the company has shrunk its capitalization by 25% through share repurchases that may enable, if not encourage, a takeover.

Expertise in high-speed multiprotocol networking will help **Network Systems Corp.** fatten its bottom line, especially as personal computer networks get larger and more sophisticated. New routers will further accelerate revenue in the near term. The acquisition of **Vitalink Communications Corp.** expands Network Systems' distribution channels, adds to its Token Ring capabilities and brings in a more aggressive PC-oriented management.

New network connections will increase at a 15% to 20% annual rate during the next five years. Currently, less than 30% of all PCs in business, government and education are connected to a LAN. By 1995, that number will rise to more than 50%. — *Data Communications Outlook, DLJ, June 1991.*

KIM S. NASH

## STOCK TRADING INDEX




## THIS WEEK'S HIGHLIGHTS

• Pacts — or scuttlebutt about them — helped stock prices yo-yo last week. IBM shares went up and down as rumors of a technology swap with Apple Computer, Inc. ran rampant. IBM settled at 97⅝, down 1½ points for the week, as Apple added half a point to 42½. Lotus Development Corp. jumped 2⅝ points to 33⅞; it recently announced a software licensing agreement with IBM.

• Autodesk, Inc. plunged 12⅝ points to 46⅝ after saying that shipment of a new version of Autocad, an engineering and design package, will be delayed until next quarter.

• Intel Corp. slipped 1½ points to 45⅝ after it cut chip prices. Texas Instruments, Inc. sank 2¼ points to 33, while Motorola, Inc. picked up ⅝ of a point to close Thursday at 65⅞.

• Network equipment supplier Chipcom Corp. dropped to a new 52-week low of 12¼ Thursday, down 2½ points. Cisco Systems, Inc. fell 2⅞ points to 31.

# Computerworld Friday Stock Ticker

CLOSING PRICES FRIDAY, JUNE 28 , 1991

### TOP PERCENT GAINERS

| | |
|---|---|
| Intellicorp Inc. | 28.57 |
| Information Resources | 13.10 |
| Computer Automation Inc. | 11.76 |
| On Line Software Int'l | 10.81 |
| Printronix Inc. | 10.42 |

### TOP PERCENT LOSERS

| | |
|---|---|
| Archive Corp. | -37.74 |
| Pyramid Technology | -37.01 |
| Micrografx | -26.87 |
| Artel Communication Corp. | -25.00 |
| Software Publishing Corp. | -24.34 |

### TOP DOLLAR GAINERS

| | |
|---|---|
| Amercan Info Techs Corp. | 3.13 |
| Information Resources | 2.75 |
| Lotus Development | 2.75 |
| Southwestern Bell Corp. | 2.50 |
| Pacific Telesis Group | 2.00 |

### TOP DOLLAR LOSERS

| | |
|---|---|
| Autodesk Inc. | -9.00 |
| Adobe Systems Inc. | -7.13 |
| Pyramid Technology | -7.13 |
| Aldus Corp. | -5.50 |
| Software Publishing Corp. | -4.63 |

| Exch | 52-Week | Range | | June 28 Close | Wk Net Change | Wk Pct Change |
|---|---|---|---|---|---|---|
| **Communications and Network Services** | | | **Off 1.88%** | | | |
| OTC | 19.00 | 5.38 | 3 COM Corp. | 7.63 | -0.25 | -3.17 |
| NYS | 69.75 | 52.50 | American Info Techs Corp. | 60.25 | 3.13 | 5.47 |
| NYS | 39.25 | 29.00 | AT&T | 38.25 | 0.25 | 0.66 |
| OTC | 5.13 | 0.88 | Artel Communication Corp. | 1.50 | -0.50 | -25.00 |
| NYS | 56.25 | 39.50 | Bell Atlantic Corp. | 47.25 | 1.25 | 2.72 |
| NYS | 56.25 | 46.38 | Bellsouth Corp. | 48.38 | 1.50 | 3.20 |
| NYS | 44.00 | 13.13 | Cabletron Systems | 36.75 | -2.63 | -6.67 |
| OTC | 25.88 | 8.25 | Compression Labs Inc. | 16.00 | -0.63 | -3.76 |
| OTC | 5.13 | 2.44 | Data Switch Corp. | 2.88 | 0.13 | 4.55 |
| NYS | 26.13 | 8.88 | Digital Comm. Assoc. | 14.13 | -0.88 | -5.83 |
| OTC | 25.25 | 12.25 | Dynatech Corp. | 18.50 | 0.25 | 1.37 |
| OTC | 12.38 | 5.50 | Fibronix Int'l Inc. | 7.25 | -0.50 | -6.45 |
| OTC | 3.88 | 1.75 | Gandalf Technologies Inc. | 3.13 | -0.13 | -3.85 |
| NYS | 4.13 | 1.63 | General Datacomm Inds. | 3.00 | 0.00 | 0.00 |
| NYS | 33.50 | 23.50 | GTE Corp. | 29.63 | -0.13 | -0.42 |
| NYS | 63.00 | 40.25 | ITT Corp. | 56.25 | -3.13 | -5.26 |
| OTC | 42.63 | 17.88 | MCI Commmunications Corp. | 28.13 | -1.38 | -4.66 |
| OTC | 9.25 | 2.75 | Microcom Inc. | 7.00 | -0.75 | -9.68 |
| NYS | 9.75 | 4.00 | Network Equipment Tech. | 8.75 | -0.38 | -4.11 |
| OTC | 14.63 | 4.00 | Network General | 8.25 | -0.63 | -7.04 |
| OTC | 15.50 | 8.13 | Network Systems Corp. | 12.13 | -0.50 | -3.96 |
| NYS | 38.13 | 22.13 | Northern Telecom Ltd. | 36.50 | -0.25 | -0.68 |
| OTC | 58.50 | 17.25 | Novell Inc. | 49.00 | -0.25 | -0.51 |
| NYS | 83.25 | 67.00 | Nynex Corp. | 71.38 | 1.88 | 2.70 |
| NYS | 47.50 | 36.25 | Pacific Telesis Group | 42.25 | 2.00 | 4.97 |
| ASE | 15.38 | 4.75 | Pennl Corp. | 14.50 | 0.00 | 0.00 |
| NYS | 29.00 | 8.88 | Scientific Atlanta Inc. | 13.75 | 0.50 | 3.77 |
| NYS | 57.50 | 47.25 | Southwestern Bell Corp. | 53.63 | 2.50 | 4.89 |
| NYS | 40.50 | 20.63 | United Telecom | 29.50 | -0.50 | -1.67 |
| NYS | 40.75 | 32.38 | US West Inc. | 35.38 | 0.75 | 2.17 |
| **Computer Systems** | | | **Off 6.06%** | | | |
| OTC | 7.75 | 0.56 | Alliant Computer Sys. | 0.81 | -0.06 | -7.09 |
| ASE | 18.88 | 10.00 | Amdahl Corp. | 14.63 | -0.75 | -4.88 |
| OTC | 73.25 | 24.25 | Apple Computer Inc. | 41.50 | -0.50 | -1.19 |
| OTC | 10.63 | 4.13 | Archive Corp. | 4.13 | -2.50 | -37.74 |
| OTC | 32.75 | 7.50 | AST Research Inc. | 20.25 | -0.25 | -1.22 |
| NYS | 9.38 | 4.00 | Bolt, Beranek & Newman | 7.25 | -0.38 | -4.92 |
| NYS | 21.63 | 4.50 | Commodore Int'l | 11.63 | -0.88 | -7.00 |
| NYS | 74.25 | 31.13 | Compaq Computer Corp. | 31.13 | -2.50 | -7.43 |
| OTC | 2.13 | 0.13 | Computer Automation Inc. | 1.19 | 0.13 | 11.76 |
| NYS | 19.75 | 6.75 | Control Data Corp. | 10.63 | -0.25 | -2.30 |
| NYS | 20.88 | 8.38 | Convex Computer | 15.38 | -0.75 | -4.65 |
| NYS | 49.75 | 20.00 | Cray Research Inc. | 33.00 | 0.63 | 1.93 |
| NYS | 18.13 | 3.50 | Data General Corp. | 14.88 | -0.25 | -1.65 |
| NYS | 3.25 | 0.75 | Datapoint Corp. | 1.38 | -0.13 | -8.33 |
| OTC | 30.63 | 8.25 | Dell Computer Corp. | 24.50 | 1.88 | 8.29 |
| NYS | 86.88 | 45.50 | Digital Equipment Corp. | 59.50 | -0.75 | -1.24 |
| NYS | 34.25 | 13.75 | Harris Corp. | 25.88 | -2.00 | -7.17 |
| NYS | 55.13 | 24.88 | Hewlett Packard Co. | 50.75 | -0.75 | -1.46 |
| NYS | 139.75 | 96.25 | IBM | 97.13 | -2.50 | -2.51 |
| OTC | 13.50 | 7.75 | Information Int'l | 9.50 | -1.50 | -13.64 |
| OTC | 31.50 | 10.50 | Intergraph | 25.25 | -1.50 | -5.61 |
| NYS | 2.25 | 0.50 | MAI Systems Corp. | 0.50 | -0.06 | -11.19 |
| NYS | 149.75 | 114.00 | Matsushita Electronics | 120.00 | 2.00 | 1.69 |
| OTC | 22.25 | 9.00 | Mentor Graphics Corp. | 16.25 | -0.50 | -2.99 |
| NYS | 107.00 | 44.50 | NCR Corp. | 107.00 | 1.00 | 0.94 |
| OTC | 31.75 | 11.00 | Pyramid Technology | 12.13 | -7.13 | -37.01 |
| OTC | 33.25 | 9.75 | Sequent Computer Sys. | 11.25 | -2.50 | -18.18 |
| NYS | 47.25 | 18.00 | Silicon Graphics | 28.38 | -0.75 | -2.58 |
| NYS | 37.25 | 14.63 | Stratus Computer Inc. | 29.38 | 0.00 | 0.00 |
| OTC | 38.63 | 15.00 | Sun Microsystems Inc. | 27.88 | -1.75 | -5.91 |
| NYS | 24.75 | 8.88 | Tandem Computers Inc. | 13.88 | -1.00 | -6.72 |
| NYS | 39.50 | 23.50 | Tandy Corp. | 26.75 | -2.38 | -8.15 |
| OTC | 29.50 | 6.75 | Teradata | 14.25 | -0.75 | -5.00 |
| NYS | 7.75 | 1.38 | Ultimate Corp. | 4.75 | -0.88 | -15.56 |
| NYS | 13.88 | 1.75 | Unisys Corp. | 3.75 | -0.13 | -3.23 |
| ASE | 5.75 | 2.00 | Wang Labs Inc. (b) | 3.75 | -0.25 | -6.25 |
| **Software & DP Services** | | | **Off 2.34%** | | | |
| OTC | 63.00 | 17.00 | Adobe Systems Inc. | 43.25 | -7.13 | -14.14 |
| OTC | 13.50 | 6.00 | Aicorp | 6.00 | -0.75 | -11.11 |
| OTC | 59.88 | 20.25 | Aldus Corp. | 37.75 | -5.50 | -12.72 |
| OTC | 28.50 | 12.00 | American Mgmt. Systems | 18.50 | -2.00 | -9.76 |
| OTC | 17.50 | 7.50 | American Software Inc. | 13.50 | 0.00 | 0.00 |
| NYS | 4.63 | 1.38 | Anacomp Inc. | 3.75 | -0.13 | -3.23 |
| OTC | 23.50 | 10.00 | Analysts Int'l | 14.00 | -2.50 | -15.15 |
| OTC | 13.25 | 4.88 | Ashton Tate | 10.50 | -0.25 | -2.33 |
| OTC | 10.25 | 4.00 | ASK Computer Sys. | 8.00 | 0.38 | 4.92 |
| NYS | 37.00 | 22.63 | Auto Data Processing | 32.50 | 0.50 | 1.56 |
| OTC | 60.50 | 32.00 | Autodesk Inc. | 48.50 | -9.00 | -15.65 |
| OTC | 31.50 | 18.50 | BGS Systems Inc. | 28.00 | -1.00 | -3.45 |
| OTC | 43.88 | 17.75 | BMC Software Inc. | 36.75 | -1.75 | -4.55 |
| OTC | 20.75 | 8.75 | Boole & Babbage Inc. | 9.88 | 0.38 | 3.95 |
| OTC | 64.25 | 14.50 | Borland Int'l | 43.00 | -3.50 | -7.53 |
| NYS | 8.00 | 0.44 | Businessland Inc. | 1.00 | -0.13 | -11.11 |
| OTC | 20.88 | 5.13 | Cognos Inc. | 15.25 | 0.88 | 6.09 |
| NYS | 16.63 | 4.38 | Computer Associates | 10.13 | -0.13 | -1.22 |
| OTC | 17.75 | 9.50 | Computer Horizons | 11.00 | -0.50 | -4.35 |
| NYS | 73.25 | 36.75 | Computer Sciences | 69.13 | 1.75 | 2.60 |
| NYS | 11.25 | 6.63 | Computer Task Group | 7.63 | -0.50 | -6.15 |
| OTC | 25.25 | 13.00 | Comshare Inc. | 19.25 | -0.38 | -1.91 |
| OTC | 16.00 | 3.75 | Corporate Software | 9.25 | -0.25 | -2.63 |
| NYS | 49.00 | 27.88 | General Motors E (EDS) | 46.75 | 0.13 | 0.27 |
| OTC | 18.75 | 7.25 | Goal Systems Int'l | 13.75 | 0.25 | 1.85 |
| OTC | 7.00 | 1.88 | Hogan Systems Inc. | 5.13 | -0.13 | -2.38 |
| OTC | 23.75 | 7.75 | Information Resources | 23.75 | 2.75 | 13.10 |
| OTC | 17.50 | 2.63 | Informix Corp. | 5.75 | -0.50 | -8.00 |
| OTC | 7.88 | 1.38 | Intellicorp Inc. | 2.25 | 0.50 | 28.57 |
| OTC | 8.25 | 2.50 | Interleaf Inc. | 5.38 | -0.63 | -10.42 |
| OTC | 15.25 | 6.88 | Intersolv | 9.25 | 0.25 | 2.78 |
| OTC | 43.25 | 10.00 | Knowledgeware Inc. | 21.75 | -3.75 | -14.71 |
| OTC | 45.00 | 16.75 | Legent Corp. | 25.13 | -1.38 | -5.19 |
| OTC | 36.50 | 12.50 | Lotus Development | 33.50 | 2.75 | 8.94 |
| OTC | 32.00 | 12.25 | Micrografx | 12.25 | -4.50 | -26.87 |
| OTC | 117.50 | 50.75 | Microsoft Corp. (s) | 68.13 | -0.04 | -0.06 |
| NYS | 10.50 | 4.00 | On Line Software Int'l | 10.25 | 1.00 | 10.81 |
| OTC | 23.63 | 4.88 | Oracle Systems | 8.50 | -0.25 | -2.86 |
| NYS | 14.63 | 7.00 | Pansophic Systems | 10.88 | -0.25 | -2.25 |
| OTC | 9.25 | 1.25 | Phoenix Technologies | 7.88 | 0.13 | 1.61 |
| NYS | 52.00 | 33.38 | Policy Management Sys. | 47.75 | 0.13 | 0.26 |
| NYS | 22.75 | 11.50 | Reynolds & Reynolds | 22.25 | 1.25 | 5.95 |
| OTC | 27.25 | 14.75 | SEI Corp. | 26.25 | 0.00 | 0.00 |
| OTC | 22.75 | 12.50 | Shared Medical Systems | 19.63 | -1.50 | -7.10 |
| OTC | 35.25 | 12.00 | Software Publishing Corp. | 14.38 | -4.63 | -24.34 |
| NYS | 14.63 | 5.50 | Sterling Software | 11.38 | 0.00 | 0.00 |
| OTC | 26.00 | 9.50 | Sungard Data Sys. | 16.75 | 0.25 | 1.52 |
| OTC | 55.88 | 17.75 | Symantec Corp. | 42.75 | -2.75 | -6.04 |
| NYS | 22.63 | 4.50 | System Center Inc. | 9.75 | 0.75 | 8.33 |
| OTC | 37.25 | 12.50 | System Software Assoc. | 15.00 | 0.88 | 6.19 |
| OTC | 22.75 | 4.75 | Weitek | 10.88 | 0.88 | 8.75 |
| **Semiconductors** | | | **Off 3.87%** | | | |
| NYS | 14.25 | 3.63 | Advanced Micro Devices | 12.00 | 0.00 | 0.00 |
| NYS | 12.50 | 5.50 | Analog Devices Inc. | 9.50 | -0.25 | -2.56 |
| OTC | 21.75 | 5.25 | Chips & Technologies | 7.63 | -0.88 | -10.29 |
| OTC | 59.25 | 28.00 | Intel Corp. | 46.50 | -0.50 | -1.06 |
| NYS | 13.00 | 5.13 | LSI Logic Corp. | 8.00 | -0.13 | -1.54 |
| NYS | 19.13 | 6.75 | Micron Technology | 11.75 | -1.38 | -10.48 |
| OTC | 20.88 | 7.25 | MIPS Computer Systems | 15.63 | -0.88 | -5.30 |
| NYS | 88.25 | 45.75 | Motorola Inc. | 66.13 | 0.13 | 0.19 |
| NYS | 8.38 | 3.00 | National Semiconductor | 5.63 | -0.13 | -2.17 |
| NYS | 47.63 | 22.50 | Texas Instruments | 33.25 | -1.25 | -3.62 |
| OTC | 12.25 | 3.00 | VLSI Technology | 8.13 | 0.13 | 1.56 |
| ASE | 14.25 | 4.00 | Western Digital Corp. | 4.00 | -0.50 | -11.11 |
| **Peripherals & Subsystems** | | | **Off 3.70%** | | | |
| OTC | 2.75 | 0.88 | Apertus Technologies | 1.88 | 0.00 | 0.00 |
| OTC | 22.63 | 7.50 | Banctec Inc. | 11.75 | -0.75 | -6.00 |
| OTC | 17.50 | 4.25 | Cambex Corp. | 12.00 | 0.88 | 7.87 |
| ASE | 11.75 | 4.13 | Cognitronics Corp. | 8.63 | -0.13 | -1.43 |
| NYS | 31.25 | 14.63 | Conner Peripherals | 16.13 | -0.75 | -4.44 |
| ASE | 22.00 | 7.00 | Dataram Corp. | 10.13 | -0.63 | -5.81 |
| NYS | 13.00 | 4.25 | EMC Corp. | 10.13 | -0.13 | -1.22 |
| NYS | 47.25 | 33.75 | Eastman Kodak Co. | 38.75 | -2.00 | -4.91 |
| OTC | 11.25 | 4.75 | Emulex Corp. | 7.50 | -0.25 | -3.23 |
| OTC | 30.25 | 14.00 | Evans & Sutherland | 20.00 | 0.50 | 2.56 |
| OTC | 6.50 | 3.88 | Iomega Corp. | 4.38 | -1.13 | -20.45 |
| OTC | 28.25 | 6.75 | IPL Systems Inc. | 18.75 | -1.13 | -5.66 |
| OTC | 1.38 | 0.13 | Masstor Systems | 0.69 | 0.03 | 4.88 |
| OTC | 15.88 | 2.63 | Maxtor Corp. | 2.88 | -0.63 | -17.86 |
| OTC | 18.00 | 4.38 | Micropolis Corp. | 6.38 | -0.38 | -5.56 |
| NYS | 97.50 | 73.63 | 3M Corp | 93.63 | -2.25 | -2.35 |
| OTC | 13.13 | 6.00 | Printronix Inc. | 6.63 | 0.63 | 10.42 |
| NYS | 24.75 | 8.50 | OMS Inc. | 18.38 | -2.00 | -9.82 |
| OTC | 18.25 | 8.25 | Quantum Corp. | 10.38 | -0.75 | -6.74 |
| NYS | 7.63 | 4.38 | Recognition Equipment | 6.25 | -0.75 | -10.71 |
| OTC | 11.50 | 4.00 | Rexon Inc. | 7.38 | -0.50 | -6.35 |
| OTC | 19.88 | 5.63 | Seagate Technology | 7.50 | -1.88 | -20.00 |
| NYS | 47.00 | 11.00 | Storage Technology | 39.13 | 1.68 | 5.03 |
| OTC | 4.75 | 1.25 | Tandon Corp. | 3.25 | -0.06 | -1.90 |
| NYS | 26.38 | 11.63 | Tektronix Inc. | 26.13 | -0.13 | -0.48 |
| OTC | 0.53 | 0.16 | Televideo Systems | 0.34 | 0.00 | 0.00 |
| NYS | 60.13 | 29.00 | Xerox Corp. | 54.00 | 0.25 | 0.47 |
| **Leasing Companies** | | | **Off 2.14%** | | | |
| OTC | 16.25 | 7.00 | Amplicon Inc. | 15.00 | 0.00 | 0.00 |
| NYS | 28.38 | 14.63 | Comdisco Inc. | 23.00 | 0.00 | 0.00 |
| OTC | 16.00 | 9.25 | LDI Corporation | 12.50 | -1.50 | -10.71 |
| OTC | 5.50 | 2.25 | Selecterm Inc. | 4.50 | 0.00 | 0.00 |

NOTE: Microsoft Corp. completed a 3-for-2 stock split.

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# NCR, Grid trumpet notepads

BY CHRISTOPHER LINDQUIST
CW STAFF

NEW YORK — Taking note of notepad computers was a major sport at last week's PC Expo '91. But while NCR Corp. provided the flair and marketing, it was Grid Systems Corp. that had the hardware to back it all up.

NCR announced its leap into the market while Grid, already well-established with its Gridpad line, unveiled a pair of new notepad models. Other vendors lined up with connectivity and software products aimed at pen-based systems.

Representatives from NCR, Intel Corp., Microsoft Corp., Go Corp. and Slate Corp. congratulated NCR on the 3125 notepad while plugging their own involvement with the product. NCR is positioning the system as an unobtrusive, nonthreatening means of providing individuals with portable computing power for a variety of uses, including sales, insurance adjusting and energy audits.

The $4,700 3125 is based on Intel's 80386SL processor, which was designed to provide better power management and longer battery life than previous Intel microprocessors. The 3.9-pound system will reportedly provide four to six hours of usable battery life. Data storage is provided by dynamic random-access memory, flash memory cards or a 20M-byte hard drive. Initial units are scheduled to ship next month to some NCR customers and independent software developers. The first units will be supplied with NCR's PenO/S DOS-based operating system.

**NCR's 3125 notepad** *is based on the Intel 80386SL microprocessor for long battery life*

While NCR was announcing technology for future use, Grid displayed two new models in its current notepad line. The Gridpad HD comes standard with a 20M-byte hard drive reportedly designed specifically to be durable enough to withstand being used in a handheld system.

The Gridpad RC includes a backlit display and uses static random-access memory cards for storage. The system is intended for use in areas with adverse lighting conditions.

Both systems use Grid's Gridpen DOS-based graphical operating system. The Gridpad HD costs $3,570, while the Gridpad RC is priced at $2,870. Both are available now.

Jon Berger, computer coordinator for the New York Giants' football team, said he is looking into the Grid pen-based systems for use by college football scouts. One of Berger's reasons for looking at notepads was basic: "It's not intimidating."

Additional products for pen-based personal computers were also on the agenda at this year's PC Expo:

- Sitka Corp. announced Pentops for the NCR 3125. Pentops is a mobile networking product designed for use with the Penpoint operating system to allow file and printer sharing among computers.
- Futuresoft Engineering, Inc. unveiled versions of its Dynacomm Asynchronous and Dynacomm/Elite communications packages for use with Windows for Pen Computing.
- Motorola, Inc. announced plans for a wireless communications product for the NCR 3125.
- Communicate Ltd. said it will produce Cmsfax, software for fax modems running under Windows for Pen Computing.

# Officevision

FROM PAGE 1

options — partial graphical support — for users who need direct connect support," said Tony Mondello, programming systems director for IBM Office Systems Development.

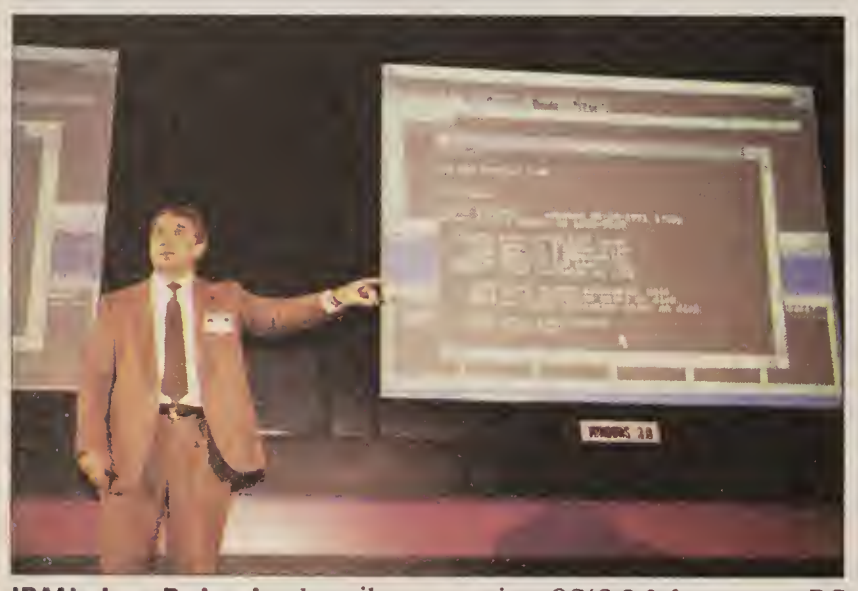
As of June 28, Officevision users gained the ability to launch a DOS application from an Officevision desktop, a set of mail application programming interfaces (API) and tools to allow users to integrate their applications with Officevision. Additional features now available include LAN-to-LAN address book replication, a more streamlined approach to using electronic mail, performance and capacity improvements and support for 13 foreign languages.

A Windows client and requestor, along with support for Netware/386 Level 3.11 and Netware/286 Level 2.2, will be available in December, according to Mondello.

Analysts were enthusiastic about what IBM is able to deliver. Windows and Netware support is "critical," said Stuart Woodring, an analyst at Forrester Research, Inc.

Netware support means users on Netware LANs will no longer have to go through IBM's OS/2 LAN Server to get to Officevision, Mondello said.

Also slated for a December release are additional office APIs for mail and address books, support for a 16-bit Officevision LAN under the by-then-shipping 32-bit OS/2 2.0 and some other enhancements, Mondello said.



**IBM's Lee Reiswig** *describes upcoming OS/2 2.0 features to PC Expo attendees*

### Closer to goals

IBM's endorsement of the Lotus products "brings us one step closer to achieving our information integration goals across multivendor platforms," said Notes and CC:Mail, Inc.'s CC:Mail user Craig Goldman, a senior vice president at The Chase Manhattan Bank AP.

"I think a major component of how [Lotus] transports and shares information will be bolted into OS/2," said Sheldon Laube, Price Waterhouse's director of technology. "This is great. Notes' message transport is far superior" to the message handling system standard.

Notes will also eventually open up the IBM-only Officevision at the low end to Apple Computer, Inc. and Unix users.

IBM will remarket both Lotus packages. It has informed Microsoft and its Consumer Software subsidiary that it will no longer resell the latter's Network Courier mail package.

IBM plans to incorporate pieces of CC:Mail and Notes into OS/2 via an Extended Service Package (ESP) that users purchase as add-ons to OS/2. IBM's ESPs are not covered under the cross-licensing agreement between IBM and Microsoft, which means Microsoft will not have access to the Lotus technology.

# Word processors for Windows: Good, bad news

BY PATRICIA KEEFE
and CAROL HILDEBRAND
CW STAFF

NEW YORK — There was plenty of news relating to Microsoft Corp. Windows 3.0 word processing at PC Expo '91, although not all of it was good.

Users of Ami Pro from Lotus Development Corp. will be able to upgrade to Release 2.0. However, frustrated users awaiting Wordperfect Corp.'s much-delayed Wordperfect for Windows had to settle for more reassurances that it is on the way.

Last fall, a Wordperfect newsletter told users to expect the product by the end of the year. Then the delivery date was moved to the first half of 1991. Last week, W. Pete Peterson, an executive vice president at the Orem, Utah-based firm, said Wordperfect for Windows is currently nearing the end of only its alpha testing cycle.

With a beta-testing period of roughly three months, the product should be delivered in mid-September, Peterson estimated. Once it does ship, discounts of up to 35% are planned, he said.

Wordperfect for Windows will support Windows 3.0's Dynamic Data Exchange (DDE) and will comply with IBM's Common User Access guidelines.

The company also announced a third-quarter ship date for Wordperfect 2.1 for the Macintosh, which will support Apple Computer, Inc.'s System 7.0.

### Ami Pro appears

A more substantive announcement came from Lotus, which unwrapped Release 2.0 of the favorably reviewed — if not widely installed — Ami Pro word processor (see Technology Analysis page 40).

Touted as a "visual" word processor, the $495 package is another step in Lotus' long-term strategy to tightly integrate its application family, providing the same look and feel.

For example, Ami Pro 2.0 contains the same Smarticons — a customizable icon palette said to provide single-click access to features — unveiled for the first time under recently introduced Lotus' 1-2-3 for Windows. More than 120 Smarticons will be shipped with Ami Pro 2.0.

An enhanced macro language allows users to create automated documents and sophisticated applications involving other Windows programs, sharing data through the Windows 3.0 Clipboard, DDE and Object Linking and Embedding protocols.

# Borland to create Objectvision for OS/2

BY JAMES DALY
CW STAFF

IBM moved to entice more programmers to write for the struggling OS/2 operating system last week with the announcement that Borland International, Inc. will build a version of its Objectvision programming tool for OS/2 2.0, which is expected near the end of the year.

The Objectvision application has been available for Microsoft Corp.'s Windows 3.0 environment since February, but Borland Chairman Philippe Kahn said the new, OS/2-oriented edition will not be a simple port of the Windows package. The upcoming version will exploit many of the advanced features of the 32-bit OS/2 2.0, including a new workplace shell, the database manager in the Extended Services offering and assorted multithreading capabilities.

Objectvision is a highly graphical, object-oriented package that eliminates some of the typically cryptic programming methods, such as relational database structures.

With Objectvision, a user builds applications by drawing a screen interface in the shape of a form and attaching properties to its objects. Decision trees — pictorial descriptions of available alternatives — are included in fields that are linked to local or networked external data files.

# Intel unveils 50-MHz chip

*Dell says it's ready to ship I486DX system, other vendors to follow*

BY CHRISTOPHER LINDQUIST
CW STAFF

Intel Corp. formally announced the latest and most powerful model in its line of microprocessors — the 50-MHz I486DX — the day before the official start of PC Expo '91.

The announcement was followed by a flood of vendors announcing systems based on the chip, although most of them said they will not be able to begin product shipments until the third or fourth quarter of this year.

The 1.2 million-transistor 50-MHz I486 is reportedly 50% faster than the 33-MHz version. It will also be available on a CPU cache module with 256K bytes of cache. The module is intended to allow developers to concentrate on systems design by "isolating the high frequencies that cause design problems."

Intel stated that the microprocessor and module will be available in limited quantities this month, with larger volume shipments beginning in the fourth quarter.

A variety of systems based on the processor were announced and demonstrated at PC Expo.

Among the vendors' announcements were Compaq Computer Corp.'s Deskpro 486/50L; Digital Equipment Corp.'s 50-MHz I486 DECpc, IBM's Personal System/2 Model 95 upgrade, NCR Corp.'s 3447 server, Dell Computer Corp.'s 450DE and 450SE and Acer American Corp.'s Acerframe 1000 and 3000.

While most of the vendors announced third- or fourth-quarter availability for their systems, one notable exception was Dell. Dell said the 450DE, a desktop unit, is available now, and the 450SE, a tower configuration, will be available later this month.

When asked how the company could be shipping the systems before Intel's announced volume shipment dates, a Dell spokeswoman said the company felt it had a sufficient number of the processors on hand to begin shipping the systems.

Peter Kastner, a vice president at Aberdeen Group in Boston, indicated that with the 50-MHz I486 announcement, Intel has launched itself into direct competition with workstation vendors for such market segments as database servers.

"The 50-MHz chip should perform well into the heart of today's RISC machines for non-numerically intensive applications," he said.

He also noted that the processor will allow vendors to design relatively inexpensive systems with power comparable to mini- and mainframe-class computers.

### Speedsters to come

*Soon after Intel introduced its 80486 microprocessor chip, a swarm of vendors announced new PCs that will utilize the chip*

| Company | Product | Approximate retail price | Availability |
|---|---|---|---|
| Dell Computer Corp. | 450DE<br>450SE | $8,099<br>$9,399 | Immediately<br>July |
| IBM | PS/2 Model 95 upgrade | $3,695 to $7,495 | NA |
| Digital Equipment Corp. | DECpc | NA | NA |
| Compaq Computer Corp. | 486/50L | $11,299 to $13,999 | Q3 |
| NCR Corp. | 3447, 3450 | NA | NA |
| Wang Laboratories, Inc. | EC460/50C | $12,995 | September |
| Advanced Logic Research, Inc. | Businessveisa Models 460, 680 Powerpro Array | $9,495 to $18,995 | Q4 |
| Acer America Corp. | Acerframe 1000<br>Acerframe 3000 | $8,495<br>$17,000 | Q4 |

NA: Not available

CW Chart: Janell Genovese

# Vendors drop their PC prices — again

BY MICHAEL FITZGERALD
CW STAFF

Price cuts by personal computer vendors are beginning to sound like a broken record, but one that users will listen to as often as possible. Last week, Compaq Computer Corp. dropped prices again, and Northgate Computer Systems, Inc. cut its prices.

Compaq's price cuts were less dramatic than prior cuts — $100 to $300 on its Deskpro models based on Intel Corp.'s 80386DX and 80386SX chips and up to $1,200 on its Intel I486-based 33-MHz Deskpro models.

The lowest priced 386SX, with no hard drive, will now cost $1,999, down from $2,099, while the Deskpro 486/33L with a 120M-byte hard drive will cost $8,999, down from $10,099.

Analysts took the cuts in stride. "It's fine-tuning to make room for the 50-MHz box" announced last week, said Eric Zimits, an analyst at Rauscher Pierce Refsnes, Inc. in Dallas.

George Thompson, an analyst at Datapro Information Services Group in Delran, N.J., said, "Everyone is reducing prices. The slow market is causing this, and the successful clone vendors are offering products that, while not exactly the same kind of quality as Compaq, [are] good enough that people are satisfied, at a lower price."

Rumors that Compaq would hold a conference call with analysts sent the company's stock price down sharply on Thursday, but the rumors were unfounded. Compaq's fiscal quarter ended Friday, and at least one Wall Street firm cut its earnings projections.

Northgate dropped prices across the board on both its Intel- and Advanced Micro Devices, Inc.-based product lines. The biggest price reductions total 21.2%, although Northgate refused to give specifics, saying most of the PCs it ships are custom-configured.

Arthur Lazere, Northgate's chairman, said Northgate cut prices to respond to the general decline in market prices and because of reduced component prices and lower overhead costs.

# Plethora of products publicized at PC Expo

BY COMPUTERWORLD STAFF

NEW YORK — The number of announcements at PC Expo '91 made it impossible for attendees to keep abreast of each new offering. Behind the spotlight focus on pen-based computing and high-end hardware was a cornucopia of product introductions spilling across every market niche.

Some of the more interesting product announcements may have gotten lost in the roar of the show:

• **Tandon Corp.** demonstrated its Option series of "cartridge upgradable" personal computers. Simply by sliding in interchangeable CPU cartridges, users can upgrade an Option system from a 16-MHz 80286-based system to an Intel Corp. 33-MHz I486-based system. A cartridge for the 50-MHz I486 is also slated to be available.

Pricing for the base unit with 2M bytes of memory, a 1.44M-byte floppy drive, a monochrome IBM Video Graphics Array monitor, Microsoft Corp.'s Windows, a keyboard and a mouse — without a CPU module — is $895. Module prices range from $795 for the 16-MHz 80286 to $2,495 for the 33-MHz I486. Hard drive options are also available.

• Because you never know when and where the Software Publishers Association will launch a piracy raid, corporate managers might want to check out PC-Audit from Rochester, N.Y.-based **Greg Lewis Productions, Inc.**

PC-Audit can be used to detect unlicensed software. The software utility is said to provide more than four times the number of audit functions of competing products while simplifying use. The program can reportedly query up to 1,000 PC users, regardless of location. Users can conduct standard baseline audits, comprehensive audits and hardware audits.

The gathered data can be used to produce reports that identify virtually all software in the user base queried.

PC-Audit costs $295 in addition to a onetime fee ranging from $6 to $8 per audited PC. Full-featured demonstration disks cost $10 each.

• **Quicksoft, Inc.** added a new member to its PC-Write family of word processors. DOS-based PC-Write Standard Level 2.0 features pull-down menus, integrated mouse support and a conversion tool that translates information from Wordperfect Corp.'s Wordperfect, ASCII and DCA/RFT.

• **Harvard Graphics** had a prototype of Harvard Graphics for Windows at the show, but you had to ask to see it. Not yet in beta testing, the product has an outliner — a tool users praised in such packages as Aldus Corp.'s Persuasion. Other features include a slide sorter and a chart gallery.

• **Marstek, Inc.** showed the Colorartist, a handheld color scanner that is just off the blocks. It has color resolution of 200 dot/ in. and gray-scale resolution of 400 dot/in. and includes the graphically based Scankit Color Utility.

# Spinnaker shows database tool

BY CAROL HILDEBRAND
CW STAFF

Spinnaker Software Corp. hopes to shift some industry trade winds into its sails with the introduction last week of Personal Access, a graphically based database access tool running on top of Spinnaker Plus, its object-oriented applications development environment.

"We believe it's going to have significant implications for making it possible for people who use information to actually get at the data themselves," said David Thurman, a vice president and Plus division manager at Spinnaker. Availability is scheduled for the fourth quarter.

Still, the company's low profile could cause problems. Several analysts contacted said that although the product sounded very promising, they were not familiar with Spinnaker, a $13 million company that employs 110 people.

Personal Access allows users point-and-click access to databases spread across the corporate desktop. The product allows access and cross-database manipulation of Ashton-Tate Corp.'s Dbase IV, Borland International, Inc.'s Paradox, Novell, Inc.'s Btrieve, Microsoft Corp.'s SQL Server, IBM's OS/2 Extended Edition Database Manager and DB2. DB/2 requires a gateway.

Thurman said that someone lacking in programming and database knowledge can create a database query without needing to know programming commands. A user can fetch information from different databases simultaneously, seeing a common interface regardless of the type of database.

Marty Glassman, director of management services at Times Mirror Co., a media holding company, will be integrating the tool into a "one order/one bill" project that would let a national advertiser place one advertising order for a variety of papers, regardless of their individual rates.

"We see this tool as a way to make it easy to move the database to various sizes and types of platforms," he said, adding that it obviated the need to contract with someone to write a custom link to a specific database.

# NEWS SHORTS

## Soviets recognize copyrights

The Supreme Soviet recently took a first step toward reining in the software piracy that pervades the Soviet Union. In adopting the final version of All Union Fundamentals of Civil Legislation, the framework for all commercial law in the Soviet Union, the legislative body laid the foundation for full Western-style copyright legislation. Article Four of the document deals with copyrights for computer software programs. It establishes general principles to which future laws must conform but does not give authors enforceable protection against pirates. In other news relating to the USSR, Lotus Development Corp. said it has signed up 61 dealers in 31 Soviet cities to sell a Russian-language version of its 1-2-3 Version 2.2. It sells for 5,000 rubles — the equivalent of $200.

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## Employers unaware of laws

Employers are eager to collect information about their employees, but more than 50% of them do not know if their state has privacy laws covering employee surveillance and records, according to a study released last week by the Society for Human Resource Management. The survey of 1,493 members of the Alexandria, Va.-based association showed that employers, and human resources managers in particular, need to ensure that their policies comply with state privacy laws, a spokesman said. The study also found that 57% of the personnel managers believe employers have the right to monitor their employees' VDT keystrokes.

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## DEC sanctions Token Ring

Digital Equipment Corp. crossed over into the Token Ring arena last week when it announced a worldwide reseller agreement with decade-long Token Ring vendor Proteon, Inc. DEC will sell Proteon personal computer adapters, bridges and routers, smart hubs and network management software to provide its once-Ethernet-weighted customers with the Token Ring links they are finding that they need as the Token Ring market continues to spiral. DEC also introduced a homegrown, $7,910 Token Ring interface for its widespread VAX midrange computer, which is scheduled to ship in September of this year. The VAX interface can switch between 4M and 16M bit/sec. Token Rings.

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## Aldus Supercard enhanced

Aldus Corp. has updated its Supercard authoring application to contain key components of Apple Computer, Inc.'s System 7.0 operating system, including Apple Events, Balloon Help and Truetype fonts. Supercard Version 1.6, which is produced by Aldus subsidiary Silicon Beach Software, Inc., will be used to integrate multiple applications and produce sophisticated multimedia presentations, front ends to databases and computer-based education and training applications. Supercard will sport a suggested retail price of $299 when it becomes available in the third quarter, the company said. Updates from earlier versions will cost $50.

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## DG wins federal deal

Data General Corp. was awarded a multimillion-dollar contract last week by the U.S. Environmental Protection Agency (EPA). Under the terms of the contract, DG will supply the agency with more than 600 of its Aviion series of workstations and servers. The Aviion machines will be used as geographical information systems in a nationwide EPA network. The EPA has a delegated procurement authority of $100 million for the eight-year contract.

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## Prodigy tops million mark

The tote board at Prodigy Services Co. rolled over last week as the on-line information network announced it had passed the 1 million-member mark. (Each subscriber to the $12.95-per-month service can create up to six family-member identifications.) A joint venture between IBM and Sears, Roebuck and Co., White Plains, N.Y.-based Prodigy began nationwide service 10 months ago.

# IBM sketches plans for inclusive nets

BY ELISABETH HORWITT
CW STAFF

RALEIGH, N.C. — IBM is planning to assault the systems integration market with a communications platform that will treat Systems Network Architecture (SNA) as just one of several popular networking protocols to be glued together, company spokesmen told *Computerworld*. However, IBM may find it hard to convince users that it is finally exchanging its proprietary stance for true openness.

An evolving architecture that IBM will begin bringing out within the next two to three years will allow users to build multivendor distributed computing environments across whatever mix of networking protocols works best for their various sites, according to Rick McGee, IBM's manager of communication systems architecture and development.

That sounds too good to be true for some users. "I don't see IBM completely embracing an open architecture like OSI," said Douglas Fields, telecommunications manager at United Parcel Service, Inc. "I don't know how, but they'll do it in a way that somehow enables them to sell their products; they are not a philanthropic organization."

McGee insists IBM has a broader view. "I don't think very many, if any, of our customers will have a network based on a single approach for the rest of the decade," he said. "I don't see SNA as side by side with" Open Systems Interconnect and Transmission Control Protocol/Internet Protocol (TCP/IP) "but as the best integrated solution with them."

Among the local-area network transport protocols that IBM plans to support are SNA, LU6.2, OSI, TCP/IP and Novell, Inc.'s IPX, McGee said.

### Opening act

*IBM's networking strategy calls for drawing in non-IBM standards to serve on a par with Systems Network Architecture (SNA)*

**Programming interfaces**

IBM's CPIC

The Open Software Foundation's (OSF) Remote Procedure Call

**Underlying protocols**

IBM's LU6.2

Open Systems Interconnect's Transaction Processing Protocol

The OSF's Distributed Computing Environment

**Transport protocols**

IBM's SNA
OSF Transport Protocols
IBM's Netbios
TCP/IP
Novell, Inc.'s IPX

CW Chart: Janell Genovese

IBM's "if you can't lick 'em, join 'em" attitude may be the right one, given that many users have refused to adopt SNA as the basis for their LAN interconnectivity strategies [CW, April 23, 1990].

Only 13 of the 50 Fortune 1,000 companies recently surveyed by Forrester Research, Inc. used their existing SNA networks to carry the majority of inter-LAN traffic, the Cambridge, Mass., firm reported.

So far, however, IBM's behavior has not convinced users of the sincerity of its intentions.

"More and more in Germany, companies are saying 'no more SNA,' but we are forced by IBM to use SNA," said Gerhard Ohring, a department manager of information technology at FAG Kugelfischer Georg Schafer KGaA. IBM recently tried to dissuade the German manufacturer from implementing the X.25 packet-switching standard as transport for its SNA network, Ohring said.

IBM's long-term internetworking strategy will not rely on SNA or on SNA-based front-end processors for internetworking, McGee said. Instead, asynchronous transport mode switches from IBM will interconnect voice, video and data devices throughout the enterprise at 1G bit/sec.

IBM is working on software to control, coordinate and direct the access of remote LAN resources across a network of these switches, McGee said.

Also in the works is software that enables devices to access the switches using popular LAN protocols. None of those protocols, including LU6.2, are designed to take advantage of 1G bit/sec. bandwidth, McGee said.

A top priority for IBM is to implement the Open Software Foundation's Distributed Computing Environment on its major operating environments, McGee said. IBM is also working to integrate both DCE and OSI with Advanced Peer-to-Peer Networking, its strategic platform for managing peer-to-peer SNA resources.

# Security plan

FROM PAGE 1

has been touting its public-key cryptographic system as a de facto industry standard.

RSA is widely used in Europe, where it has been endorsed by the International Organization for Standardization. In the U.S., about 70 companies — including Digital Equipment Corp., Lotus Development Corp., Novell, Inc. and Microsoft Corp. — have licensed the technology for use in their products.

In a recent pact with Lotus, IBM agreed to market Lotus Notes, a groupware product that uses the RSA scheme. Internet also uses the RSA system as part of its electronic mail security standard.

However, several firms have not adopted the RSA system, preferring to wait and see which standard the government endorses.

NIST has been sharing responsibility for creating a government computer security standard with the supersecret National Security Agency (NSA). Under an agreement worked out between the two agencies, NSA provides NIST with technical assistance.

### Reason behind choice

According to some experts, NSA is pushing for a standard that the agency believes it can circumvent because it is likely that NSA would not want to impede its ability to monitor electronic communications.

That must certainly have been a consideration, said John Carroll, a leading authority on cryptography and a professor emeritus in the department of computer science at the University of Western Ontario in London, Ontario.

"The RSA system is probably the best we've got at the present time," Carroll said. "There have been no successful attacks on it and no approach laid out on how to go about cracking it."

The decision to use a variant of the ElGamal technique was "driven solely by economics," a NIST spokesman said. NIST chose a standard that is free of patents and royalty requirements. "It would not be cost-effective to pay royalties to RSA," he added.

James Bidzos, president of RSA, charged that the proposed planned standard has no provision for privacy because it does not encrypt data to protect it against unauthorized snooping.

Other "fatal flaws," he said, are that NIST and NSA selected a digital signature algorithm with a verification time that is too slow for commercial use and that brute computational force could crack the scheme.

The RSA encryption system, invented by three MIT mathematicians, is widely considered the best available because the algorithm relating the two keys is so complex that it is virtually indecipherable.

# Not open

FROM PAGE 1

the price."

There are several indications that proprietary distinctions will remain:

- DEC will let go of its more sophisticated software, such as databases and on-line transaction processing, on a case-by-case basis. High availability and a product that speeds the Network File System will remain.
- IBM will keep its own systems management interface tool, real-time execution and journaled file system.
- Hewlett-Packard Co. will consider keeping products it feels allow an edge in the market.

At the extremes are Intergraph Corp., which will release no high-end software (although it has low-end software running on Sun), and Sun, which now says it will release everything.

DEC, IBM and HP all loudly protested the characterization of "proprietary openness." However, Donna Van Fleet, director of IBM's Personal Systems Programming Center in Austin, Texas, says, "Every vendor will have distinguishers."

Sun, with its new subsidiaries — Sunsoft, Inc. and Suntech, Inc. — has changed its stance on value-added software. One year ago, Scott McNealy, Sun's chief executive officer, said he would keep certain products for differentiation. With the creation of the subsidiaries, Sun will make all of its software available to license, according to Bill Keating, director of business development at Sunsoft.

Other vendors are uncertain of what they want to keep for future differentiation, perhaps because the market is moving faster than they are. Analysts said vendors are trying to keep up with their new open image. Sun appears to be able to move faster because it is relatively new and has little proprietary baggage.

Expectations of mix-and-match hardware/software were raised very quickly, said David Ticoll, director of DMR Group, Inc., a Toronto-based consulting group. "If it happens in five or 10 years, it will be miraculous."

It appears that users, too, remained skeptical of vendor openness claims. "They think they have to make their products different, but it just fragments the market," said Rick Thomas, manager of the supercomputer laboratory at Rutgers University in New Brunswick, N.J.

Like Thomas, users appeared to be resigned to vendor confusion in the short run and to the resulting extra work required of them to use open systems.

If, as vendors claim, they will eventually open up their systems and applications software to be freely licensed on other platforms, the value added for a particular vendor will come in the hardware speed, capacity, price and support.

Vendors will still develop new software, and they will have the advantage of having it run on their systems first. Their next hurdle is to make the software attractive enough for an independent software vendor to port to another architecture or to several architectures. Consortia exist to facilitate this for Sun's Scalable Processor Architecture and architectures from Mips Computer Systems, Inc., Motorola, Inc. and Intel Corp. HP is doing some of the porting in-house.

Once ported, those applications can appear in shrink-wrapped covers, but users would have to get a different version for each architecture. Then they would still need to optimize applications.

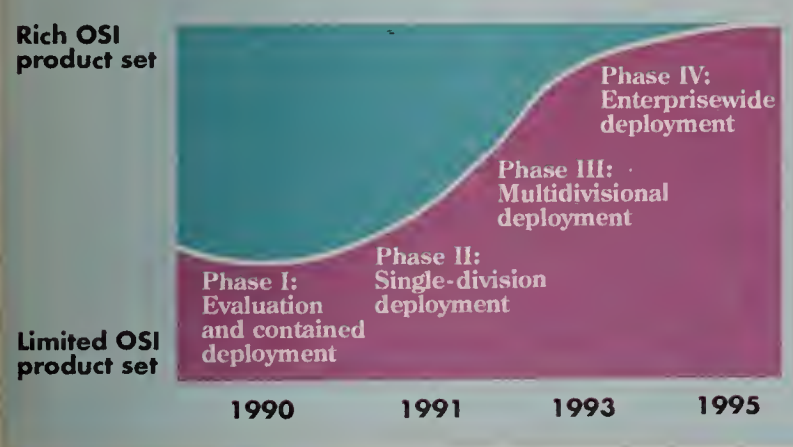
For instance, if a user bought a package of HP's network management software recompiled to run on an IBM RISC System/6000 but that computer had its own network management extensions, then IBM, the independent software vendor or the customer would have to do some programming to make them work together.

By next year, systems vendors and architecture consortia members said, they will have software that will run across products based on a single architecture, although several vendors may have their own implementations of that architecture. Vendors said they will also meet software interface standards for the OSF's OSF/1 operating system or Unix System Laboratories' System V Release 4. But portability among architectures is still in the future.

*Next week: The promise and reality of shrink-wrapped open applications.*

## The march is on

*One model envisions a four-phase move toward enterprisewide adoption of the Open Systems Interconnect*




Source: The Yankee Group

CW Chart: Janell Genovese

# OSF/1 on horizon, portability doubted

BY JOHANNA AMBROSIO
CW STAFF

The Open Software Foundation's (OSF) Unix-like operating system, OSF/1, will be available to users later this year, but it has already generated some controversy over how compatible various implementations will be.

Initial indications are that there will be applications portability among the OSF/1 versions as well as between OSF/1 and Unix System V, the other major Unix variant.

## How standard is it?

*Three major vendors involved in OSF/1 development are adding a variety of features*

| Vendor | Supports AES? [1] | Supports all OSF/1 commands and systems calls? | Due date |
|---|---|---|---|
| Hewlett-Packard Co. | Yes | Yes | Late 1991 |
| **Distinction:** Adding features from existing HP-UX and Domain operating systems, including security, systems administration and network license server. | | | |
| DEC | Yes | Yes | Late 1991 [2] |
| **Distinction:** DEC's OSF/1 version will be used by the Advanced Computing Environment (ACE) group as the basis for its Open Desktop environment. Features and functions will be added to the OSF/1 base. | | | |
| IBM | Yes | Yes | Unannounced [3] |
| **Distinction:** Adding features from AIX, including Systems Management Interface Tool, real-time execution and journaled file system. | | | |

[1] The Applications Environment Specification (AES) is the Open Software Foundation's interface definition.

[2] DEC has been shipping an OSF/1 developer's kit since March 1991. By the end of this year, the company will make available its OSF/1 version; the ACE Open Desktop is not expected until 1992.

[3] IBM has demonstrated OSF/1 running on three platforms, including the 3090 mainframe.

CW Chart: Janell Genovese

However, just as they currently do with today's System V versions, users will need to recompile applications to get them to run across the different OSF/1 platforms or to get an OSF/1 application to run on Unix System V Release 4 or vice versa. The complexity of a recompile varies from application to application, but a recompile generally takes anywhere from a few days to a week.

What is making even this level of compatibility possible is that the systems vendors are basing their OSF/1 versions on many of the same standards. Also, both System V Release 4 and OSF/1 comply with the X/Open Portability Guide.

Gerard Tellefsen, senior vice president at Tellefsen Consulting Group, Inc. in New York, said there is really not much difference between OSF/1 and Unix System V. "They both support the same standards, and a comparison of more than 100 features in the two indicated a common capability," he said.

Still, Michael Prince, director of information systems at Burlington Coat Factory Warehouse Corp., said he is worried about compatibility issues between OSF/1 and his installed base of Sun Microsystems, Inc. computers. He said he uses a Sun-developed communications protocol that OSF/1 does not support. "If I bring in OSF/1, how do I get the OSF/1 machines to communicate with my existing base?"

For that reason, Prince said, he will not be using OSF/1.

Another issue that will keep life interesting for users is that all of the OSF/1 vendors will differentiate their wares by adding proprietary twists.

"It's probably going to create some short-term discomfort," said James Collins, manager of the Open Systems Program Office at Du Pont Co. in Wilmington, Del. "But what we need to do is work closely with the vendors, understand what these value-added feaures are and determine whether it is something that will compromise the openness of the OSF/1 product."

Opinion is pretty well split over how much of an industry force OSF/1 will become.

Although the OSF will not release the exact number of OSF/1 licensees, industry watchers said that approximately a half-dozen systems vendors are actually developing with it.

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# TRENDS

## Data Communications
## U.S. electric utility market

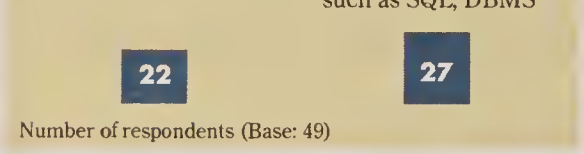
Utilities continue to invest heavily in data communications, keeping up with current technologies

### Planned/budgeted level of expenditures for data communications equipment

*While some utilities plan to spend more than $1 million on data communications equipment, most budgets fall below the million dollar mark*

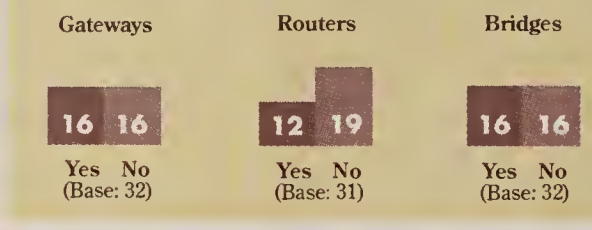
### "Client/server" direction

*While the majority of utilities plan to develop truly cooperative computing environments, many will stick with current file-sharing capabilities*




### Use of internetworking products

*Utilities are less apt to install routers than they are bridges and gateways in their LAN environments*




### LAN technology path likely to be pursued

*Most electric utilities indicated that Novell, Inc.-type LAN technology will be implemented more often, while others pledged their allegiance to different technologies*

Source: Newton-Evans Research Co., Ellicott City, Md.

CW Chart: Janell Genovese

# NEXT WEEK

The New England is 1½ years into its Strategic Systems Initiative. Under the leadership of IS chief **Michael Brown**, the $50 million project goes beyond technology implementation to change the company's focus from policies to customers — and to empower the life insurer's independent agents to do more. For an update, see Manager's Journal.

Stella Johnson

The merger of CASE tools and highly structured programming methodologies has benefits and drawbacks, users say. Some firms see productivity gains after employing methodologies; others never reach that point, claiming that coding creativity is stifled by rigid procedures. Is there a middle ground? See Systems & Software's section feature.

# INSIDE LINES

### Canal Cable Network?

▶ Now that the UK has opened the floodgates to competition in its domestic telecommunications market, all kinds of foreign bodies are swimming in those muddy waters, looking for a market niche to grab and partners to help them grab it. One of the bigger fish is U.S. Sprint, which is reportedly eyeing British canals as likely conduits for laying its cable across England.

### Selective silicon

▶ Sources in the board-making industry say IBM is so intent on making XGA a standard that it is bending its own rules, even licensing the design to two chip makers (one of which is rumored to be Intel), who will build chips to sell to third-party board makers. The last time IBM did this, though, it was with a thing called Micro Channel.

### Gone but not forgotten

▶ Michael Swavely, the former head of North American operations at Compaq who left to take a six-month sabbatical, was quoted as the company's "chief strategist" in an article published recently in a national daily newspaper. That prompted some to speculate that Swavely had never left the firm but was instead troubleshooting from behind the scenes or possibly formulating Compaq's position within the Advanced Computing Environment consortium. But a Compaq spokesperson said Swavely definitely remains on sabbatical and suggested the quote came from an interview that was conducted before Swavely left.

### Heard from your salesman lately?

▶ Stories about yet another reorganization of the Oracle USA sales division have been running rampant for two weeks. However, because Oracle is in an over-long "quiet period" prior to the expected announcement of its May 31 year-end results on July 9, it's not yet clear who's in and who's out — or if there were layoffs. All that is known is that a June sales meeting in Las Vegas shook up the roster of the company's top sales management.

### Tales of the silicon woodsman

▶ Larry Welz, the notorious 1960s underground cartoonist, has gone cyberpunk. He recently devoted an entire issue of his new "Cherry" comic to the adventures of a hacker who gets swallowed by her computer and hacks her way through (where else?) to the Land of Woz.

### An offer you could refuse?

▶ Tom Peletier, an information security specialist at General Motors in Detroit, says he would never hire Comsec Data Security, a security consulting firm launched by three ex-members of the Legion of Doom [CW, June 24]. "You don't bring in an unknown commodity and give them the keys to the kingdom," Peletier said. Chris Goggans, one of Comsec's founders, retorted: "We don't have the keys to their kingdom, but I know at least four people off the top of my head that do." Comsec said it will do a free system penetration for GM just to prove the security firm's sincerity, Goggans said. "All they have to do is sign a release saying they won't prosecute us."

### Apple imports

▶ Apple is reportedly settling on Oct. 21 as the date it will introduce three portable notebook-size computers. The least expensive one is expected to cost around $2,000 and will be manufactured by Sony. One of the models will reportedly also offer handwriting-recognition capabilities.

*It was either the unkindest cut of all or an example that the journalist will out no matter who cuts the paycheck: The Prodigy on-line service news section last week coupled a report on the supersecret IBM/Apple talks with a feature examining the bureaucratic weight pulling down IBM, which, along with Sears, owns Prodigy. We, too, like to call 'em as we see 'em, and even more, we like you to call in what you've seen. Contact News Editor Pete Bartolik at (800) 343-6474, fax documents to (508) 875-8931 or forward electronic memos to our Compuserve address, 76537,2413.*

# Mainframe Current Events

## IBM Delivers CICS/ESA V3R21

## Candle Immediately Supports CICS/ESA V3R21

## IBM Offers IMS/ESA 3.1 HIPERSPACE™ SPE Support

## IBM Releases VM/ESA 1.0

## OMEGAMON® Supports IMS/ESA 3.1

## Candle Provides "Day One" Support for VM/ESA 1.0

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|---|---|---|---|
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| *Elapsed Time* | *CPU Time* | *EXCPs* | *Job Cost* |
|---|---|---|---|
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